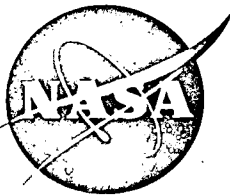


TR-942
18 February 1972
(Supersedes TR-942
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KSC LIGHTNING SUMMARY REPORT THROUGH 1971

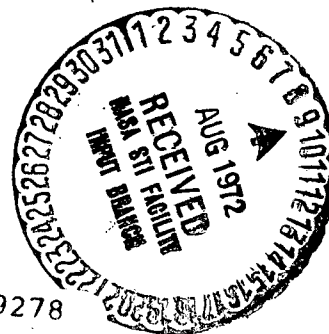
(NASA-TM-X-68398) LIGHTNING SUMMARY REPORT
THROUGH 1971 (NASA) 18 Feb. 1972 50 p
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TR-942

KSC LIGHTNING SUMMARY REPORT
THROUGH 1971

Details of illustrations in
this document may be better
studied on microfiche

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18 February 1972
(Supersedes TR-942
23 July 1971)

JOHN F. KENNEDY SPACE CENTER, NASA

TR-942

KSC LIGHTNING SUMMARY REPORT
THROUGH 1971

ABSTRACT

This report presents an updated summary of the lightning activities recorded at the John F. Kennedy Space Center and the Cape Kennedy Air Force Station. Data was compiled during the periods 1903 through 1924, 1957 through 1962, and 1964 through 1971.

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SECTION I INTRODUCTION

1.1 PURPOSE

This report presents an updated summary of lightning data recorded at various NASA facilities located at the John F. Kennedy Space Center (KSC) and the Cape Kennedy Air Force Station (CKAFS) through the year 1971. In addition to the summary of data through 1971, a separate section (Section II) presents the lightning activity observed during 1971.

1.2 SCOPE

Potential gradient data and lightning stroke activity as determined by potential gradient instrumentation are presented in tables and associated bar charts. The charts show the number of potential gradient activity days per month and the distribution of the average number of AM and PM hours per activity day for the months recorded.

1.3 GENERAL

Starting in 1964, potential gradient and lightning activity data in the KSC and CKAFS areas have been sampled and recorded by the Measurement Systems Division (IN-MSD) of the Information Systems (IN) directorate. Generally, data has not been acquired continually during the specified time period for various reasons including construction work, closing of facilities, or measurement station installation changes.

A potential gradient value of 2.4 kv/meter was selected initially as an indication of potential gradient activity. Subsequent study and development have required a correction (form) factor at various sites due to the elevations of the instruments. These form factors are not considered in this report since the information is reported as activity days and not as a measure of potential gradient.

SECTION II LIGHTNING DATA 1971

2.1 GENERAL

Lightning activity days that occurred in 1971 at KSC and CKAFS are presented in this section as charts and tabular listings. Potential gradient and stroke activity days are listed for each month.

Boundaries for launch area LC-39, the KSC industrial area, and CKAFS as well as the location of the measurement stations are shown in figure 2-1. Area boundaries are the equipotential lines between the nearest stations of two adjacent areas. Measurement station instruments are usually installed 3 feet above ground or on top of a building or other structure. During lightning activity, it is possible for a station close to the activity to make a recording while stations at a greater distance do not record.

Potential gradient is a condition that occurs when clouds contain an electron charge. The probability of a discharge (lightning stroke) becomes greater as the potential gradient increases. In this report, a potential gradient of approximately 2.4 kilovolts of potential per meter (2.4 kv/m) is used as an indication of activity.

Stroke activity is defined as a lightning discharge between clouds, or between clouds and earth ground, without regard to direction of current or electron flow or direction of luminous travel.

2.2 DATA CHARTS

Table 2-1 lists the measurement stations and the page numbers of the data charts associated with the station. Preceding each set of data charts is a table that lists the monthly activity days for the pertinent measurement station.

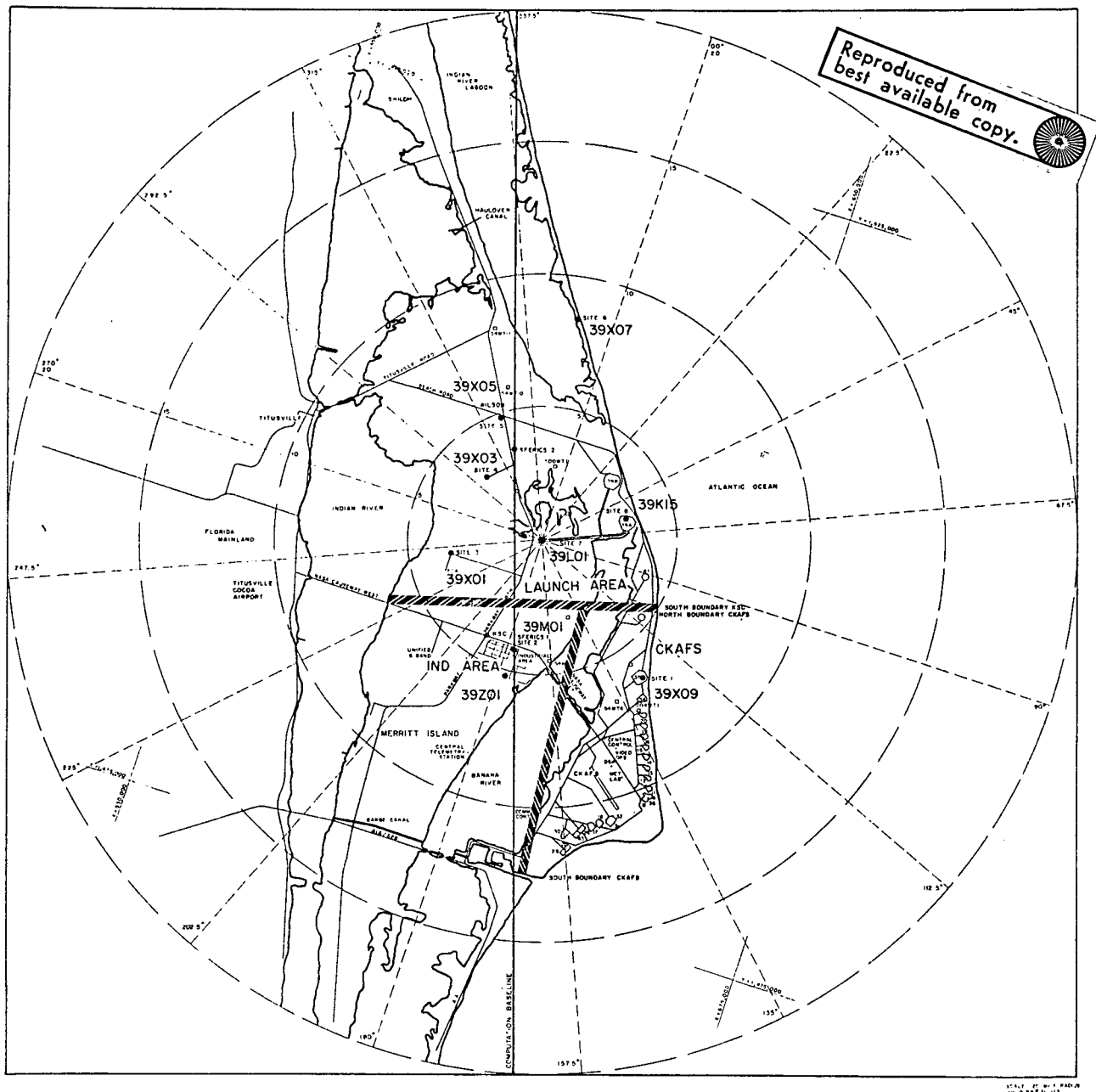


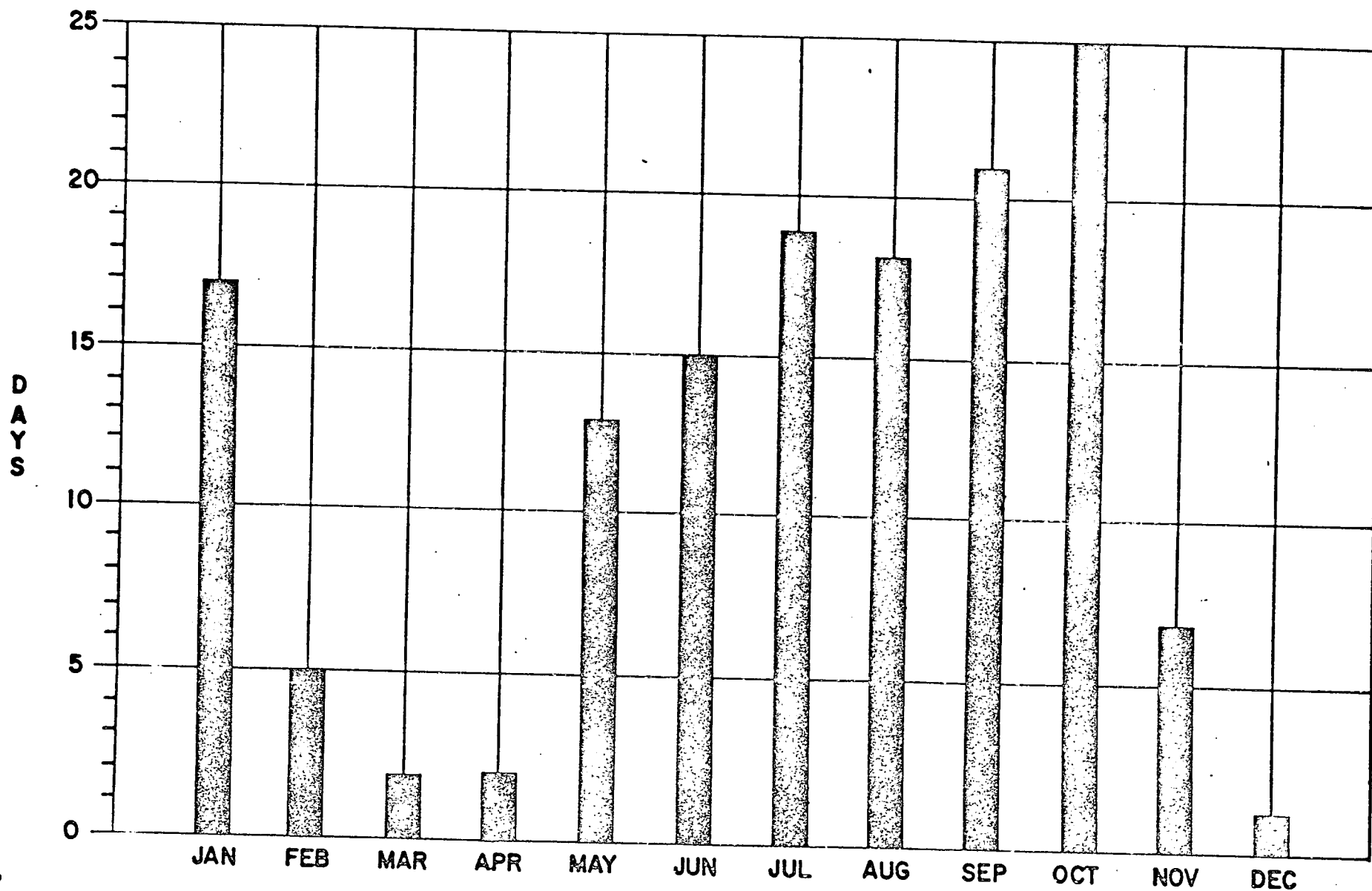
Figure 2-1. Area Boundaries and Measurement Station Locations

Table 2-1. Lightning Measurements

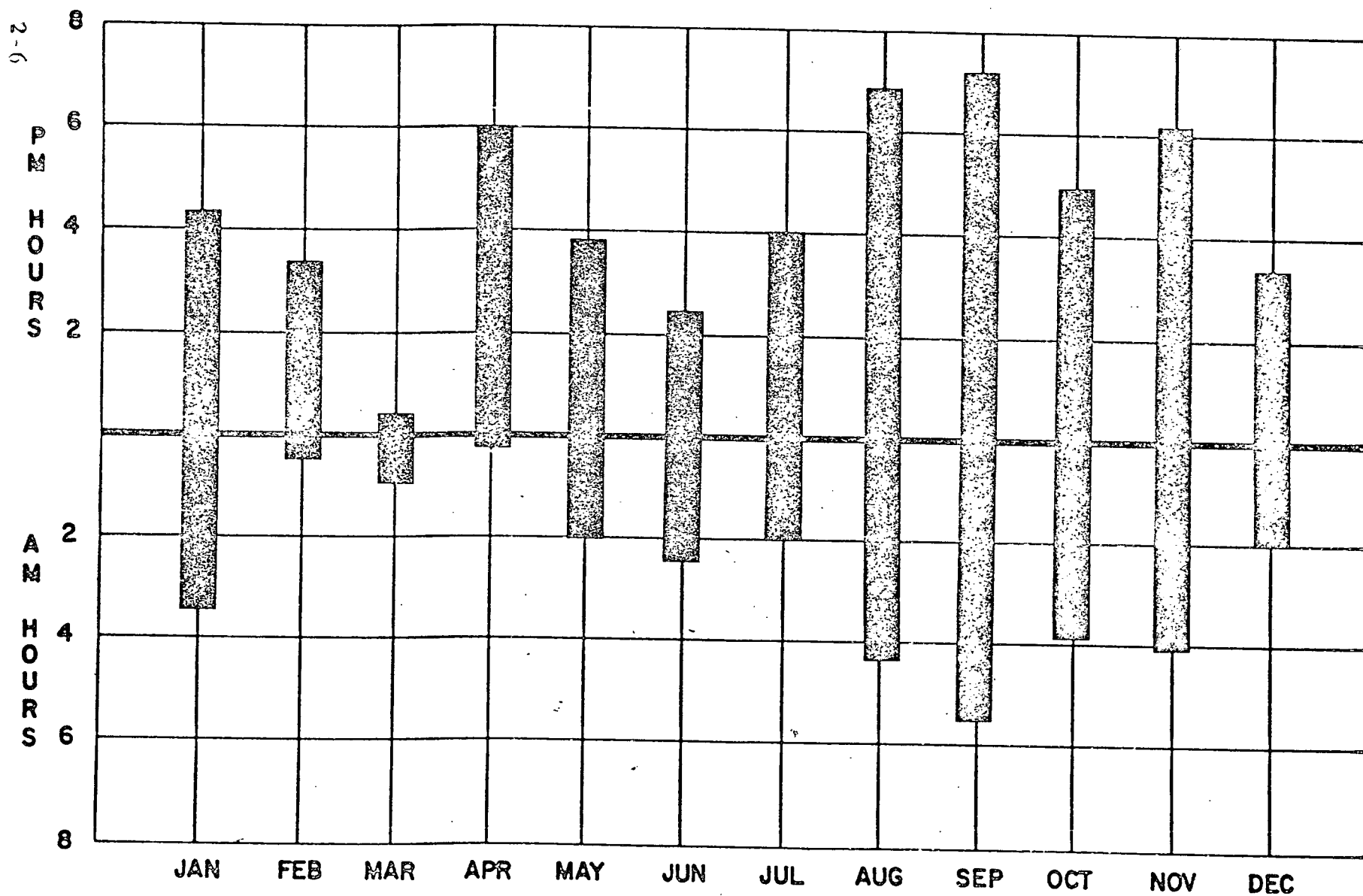
Location	Station	Activity Day Page No.	Activity Hour Page No.
Site 1, LC-37 Roof	39X09	2-5	2-6
Site 2, MSOB Roof	39M01	2-8	2-9
Near Site 2, Pyro- technic Bldg	39Z01	2-11	2-12
Site 3, FCA Road	39X01	2-14	2-15
Site 4, Sharkey Rd	39X03	2-17	2-18
Site 5, Wilson Intersection	39X05	2-20	2-21
Site 6, Playalinda	39X07	2-23	2-24
Site 7, VAB Roof	39L01	2-26	2-27
Site 8, LC-39 Pad A	39K15	2-29	2-30

Table 2-2. 1971 Summary of Measurement Station
39X09 at Site 1, LC-37 Blockhouse Roof

M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M. ACTIVITY DAYS			KV/M FOR P.M. ACTIVITY DAYS			TOTAL HOURS DATA UNAVAILABLE
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	12	00	07	08	027.2	036.2	03.8	04.5	03	04.7	06	03	07.0	15	252.3
FEB	05	01	04	03	002.7	010.5	00.6	03.5	03	06.4	15	03	12.5	15	329.7
MAR	02	00	01	01	001.0	000.5	01.0	00.5	05	05.0	05	05	05.0	05	014.0
APR	02	00	01	02	000.2	012.0	00.2	06.0	04	04.0	04	03	03.4	04	136.6
MAY	13	04	06	11	012.2	043.2	02.0	03.9	03	07.7	15	03	12.2	15	009.0
JUN	15	09	10	12	024.9	030.7	02.4	02.5	05	12.5	15	04	11.3	15	169.6
JUL	19	13	10	16	020.7	064.2	02.0	04.0	03	12.4	15	03	12.5	15	137.9
AUG	18	09	15	16	066.1	103.0	04.4	06.4	03	07.5	15	03	10.2	15	000.0
SEP	21	04	16	19	089.8	140.5	05.6	07.3	03	07.0	15	03	09.4	15	082.6
OCT	25	08	24	21	093.9	104.2	03.9	04.9	03	09.6	15	03	10.3	15	000.0
NOV	07	01	08	05	033.2	030.5	04.1	06.1	03	07.3	15	04	09.4	15	196.6
DEC	01	00	01	01	002.0	003.5	02.0	03.5	04	04.0	04	04	04.0	04	165.3



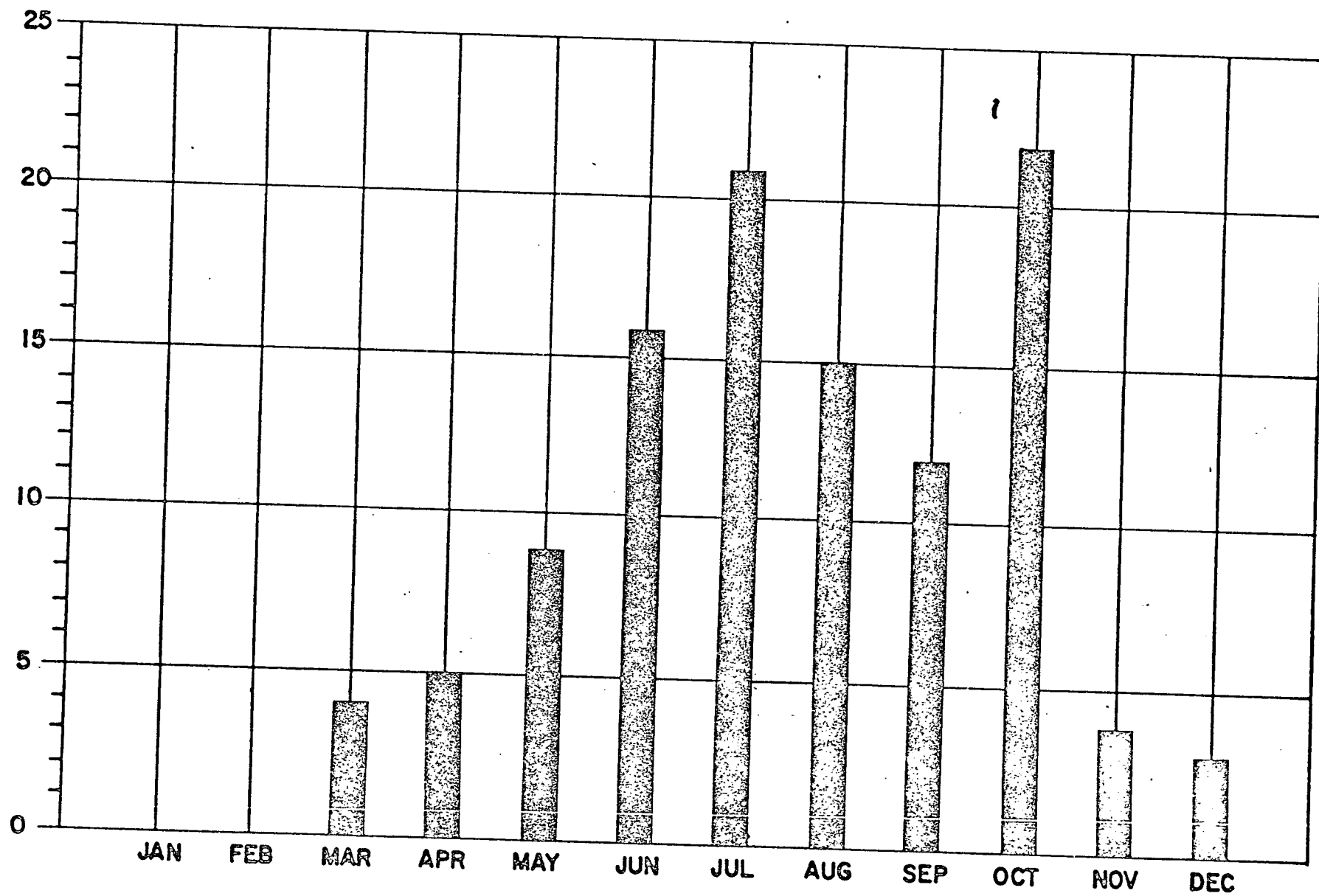
Station 39X09. Potential Gradient Activity Days per Month
in 1971 at Site 1, LC-37 Blockhouse Roof



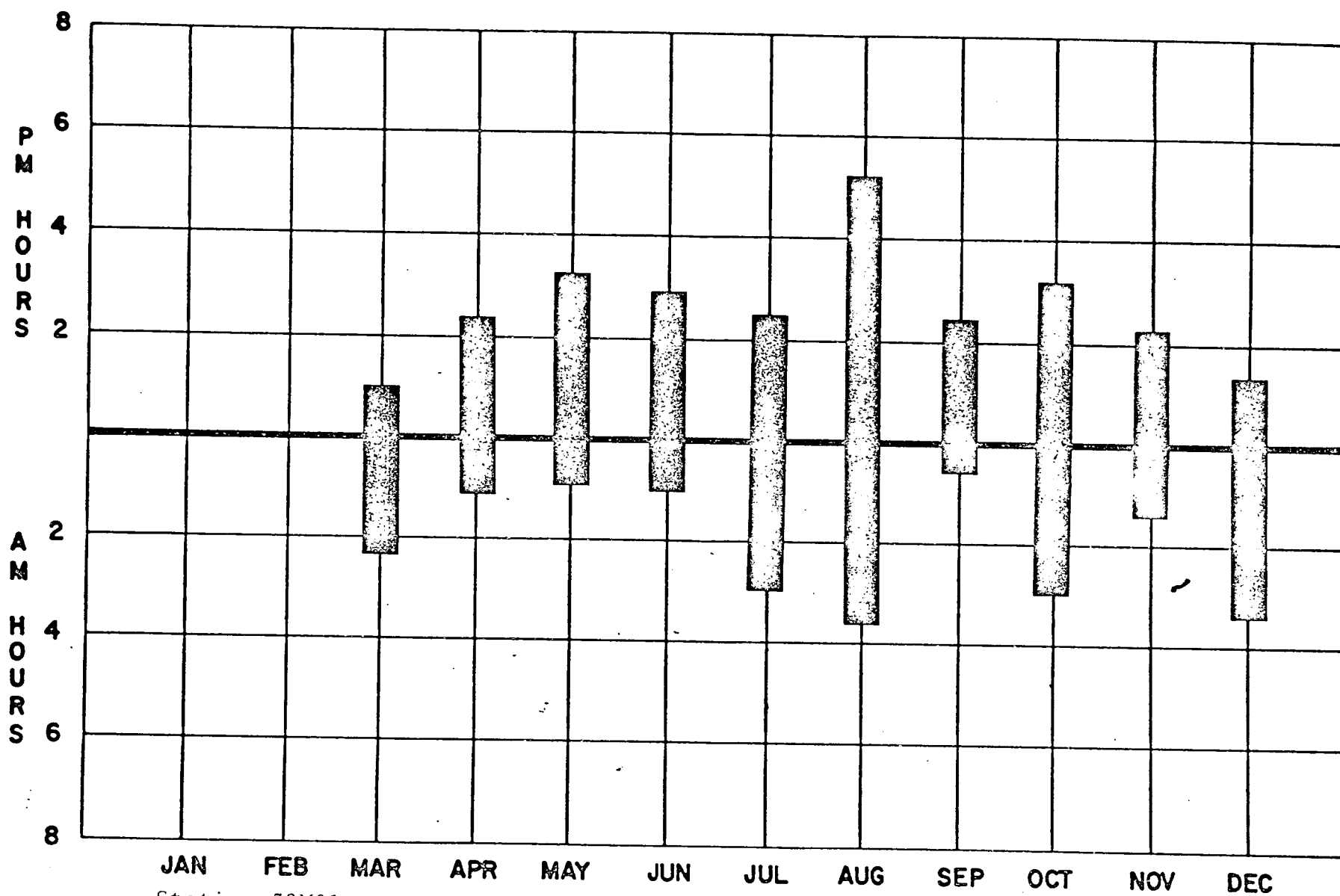
Station 39X09. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 at Site 1, LC-37 Blockhouse Roof

Table 2-3. 1971 Summary of Measurement Station
39M01 at Site 2, MSOB Roof

M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M. ACTIVITY DAYS			KV/M FOR P.M. ACTIVITY DAYS			TOTAL HOURS DATA UNAVAILABLE
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	00	00	00	00	000.0	000.0	00.0	00.0	00	00.0	00	00	00.0	00	743.4
FEB	00	00	00	00	000.0	000.0	00.0	00.0	00	00.0	00	00	00.0	00	671.5
MAR	04	03	03	03	007.7	003.2	02.5	01.0	06	13.4	15	04	10.0	15	102.9
APR	05	00	05	02	006.9	005.0	01.3	02.5	04	09.4	15	06	11.6	15	000.0
MAY	09	03	03	08	003.2	025.5	01.0	03.1	04	08.0	15	04	12.4	15	009.9
JUN	16	07	04	16	004.7	046.5	01.1	02.9	03	04.6	09	04	11.2	15	003.0
JUL	21	11	10	19	031.2	049.7	03.1	02.6	04	08.4	15	04	10.0	15	038.7
AUG	15	06	09	13	033.9	067.7	03.7	05.2	03	06.3	15	03	10.1	15	092.1
SEP	12	04	02	10	001.4	024.5	00.7	02.4	06	11.0	15	03	11.2	15	026.9
OCT	22	09	16	19	051.2	063.2	03.2	03.3	03	09.7	15	03	10.1	15	000.0
NOV	03	01	03	03	005.0	006.5	01.6	02.1	06	11.1	15	08	12.2	15	043.7
DEC	03	00	01	02	003.5	002.7	03.5	01.3	03	11.0	15	15	15.0	15	042.9



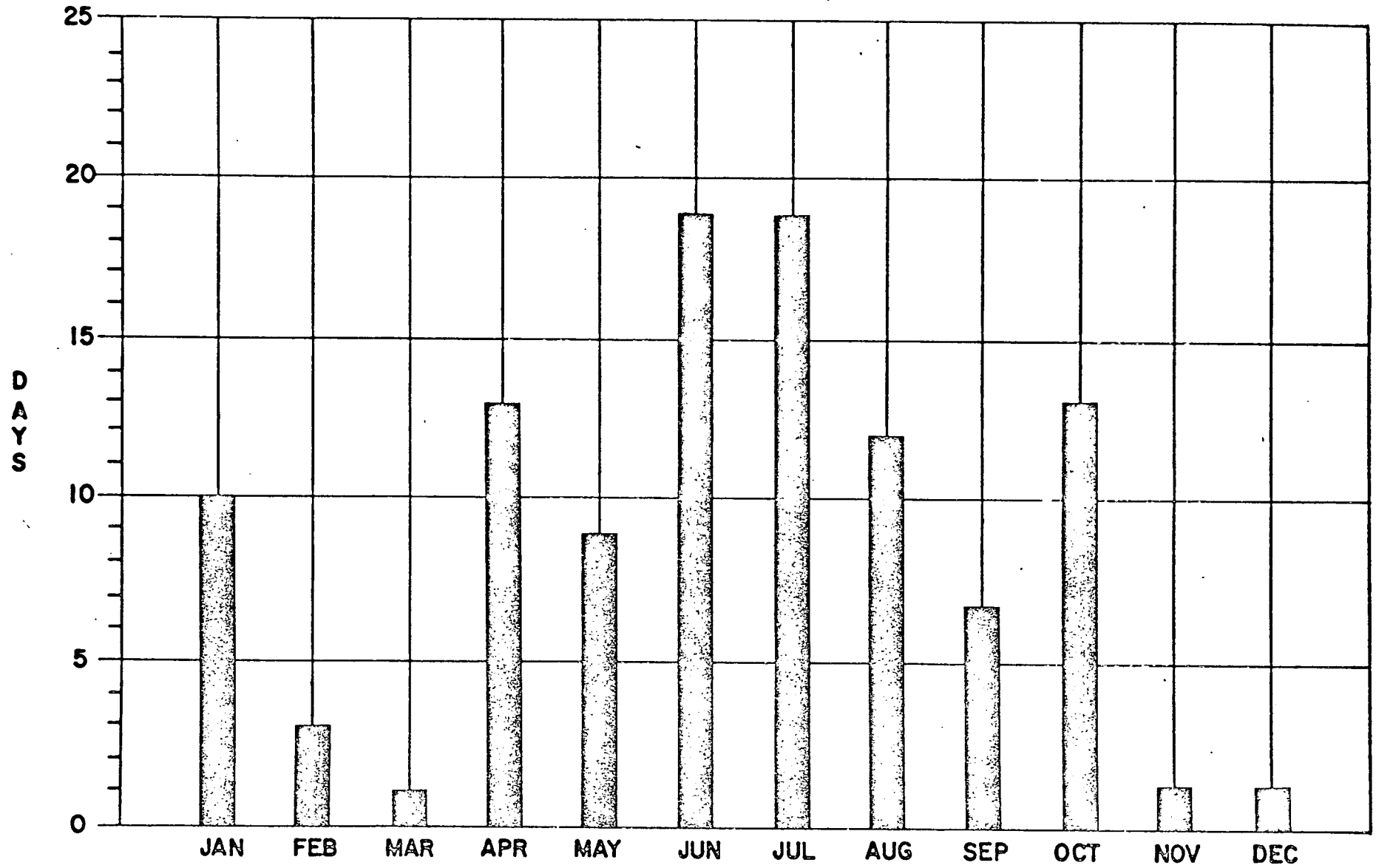
Station 39M01. Potential Gradient Activity Days per Month
in 1971 at Site 2, MSOB Roof



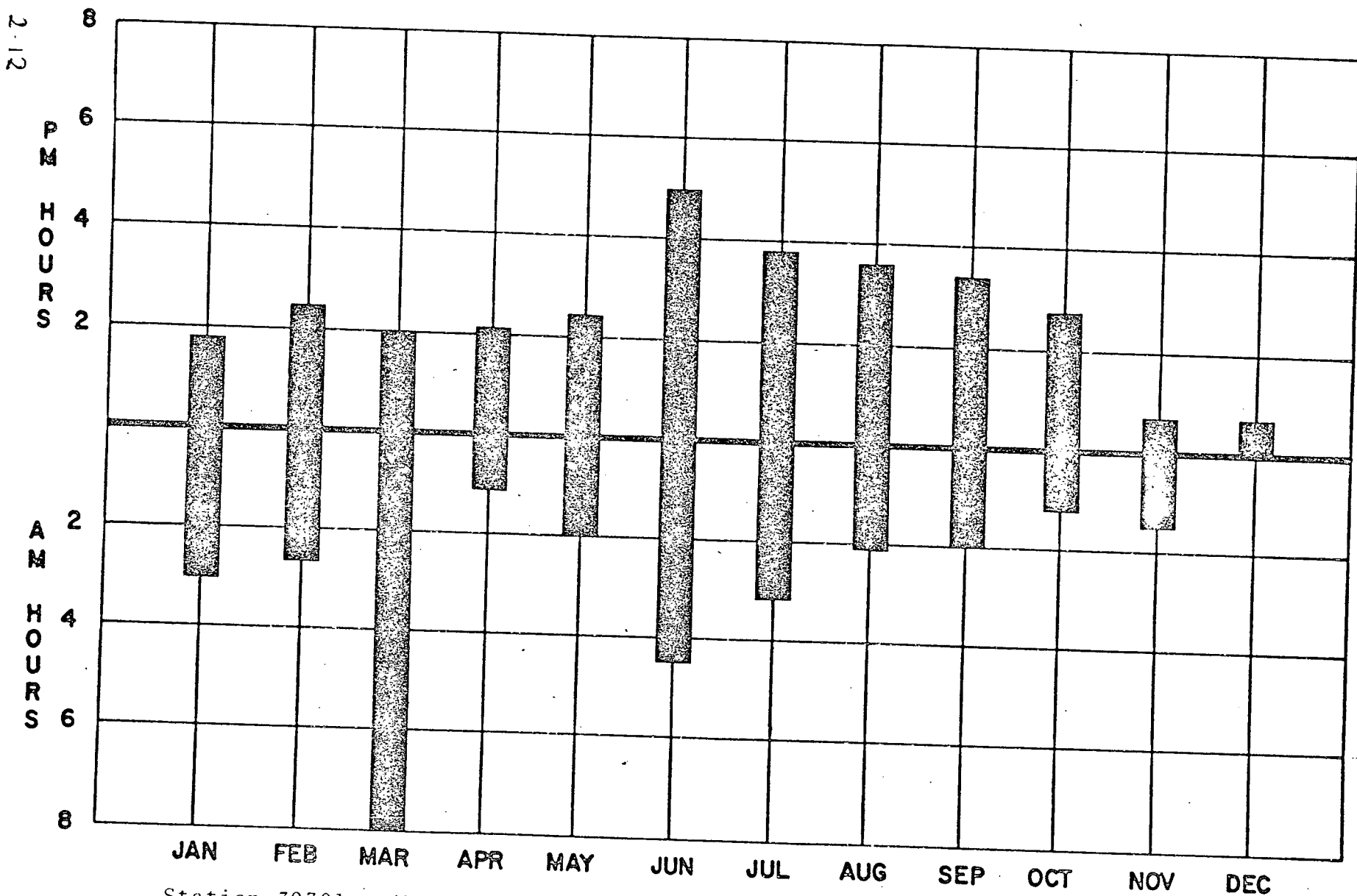
Station 39M01. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 at Site 2, MSOB Roof

Table 2-4. 1971 Summary of Measurement Station
39Z01 Near Site 2, Pyrotechnic Building

M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M. ACTIVITY DAYS			KV/M FOR P.M. ACTIVITY DAYS			TOTAL HOURS DATA UNAVAILABLE
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	10	00	08	08	025.5	014.5	03.1	01.8	04	04.7	06	04	04.5	05	000.0
FEB	03	00	02	02	005.7	005.0	02.8	02.5	04	06.0	07	05	06.6	10	460.1
MAR	01	01	01	01	010.5	002.0	10.5	02.0	05	11.6	15	05	05.0	05	668.7
APR	13	03	09	09	010.9	019.2	01.2	02.1	04	07.6	15	03	08.2	15	000.0
MAY	09	04	02	08	004.0	019.5	02.0	02.4	03	11.4	15	03	10.5	15	000.0
JUN	19	07	15	19	069.2	094.7	04.6	04.9	03	05.2	15	03	08.1	15	000.0
JUL	19	06	15	18	048.5	071.7	03.2	03.9	03	04.0	06	03	09.1	15	117.9
AUG	12	03	07	11	015.0	042.7	02.1	03.8	03	05.1	15	03	05.3	15	000.0
SEP	07	01	05	05	005.0	016.7	01.0	03.3	03	04.6	09	03	06.5	15	122.4
OCT	13	02	10	13	012.4	037.2	01.2	02.8	03	03.2	05	03	07.0	15	000.0
NOV	01	00	01	01	001.5	000.7	01.5	00.7	04	04.0	04	09	09.0	09	000.0
DEC	01	00	00	01	000.0	000.7	00.0	00.7	00	00.0	00	15	15.0	15	027.4



Station 39Z01. Potential Gradient Activity Days per Month
in 1971 Near Site 2, Pyrotechnic Building



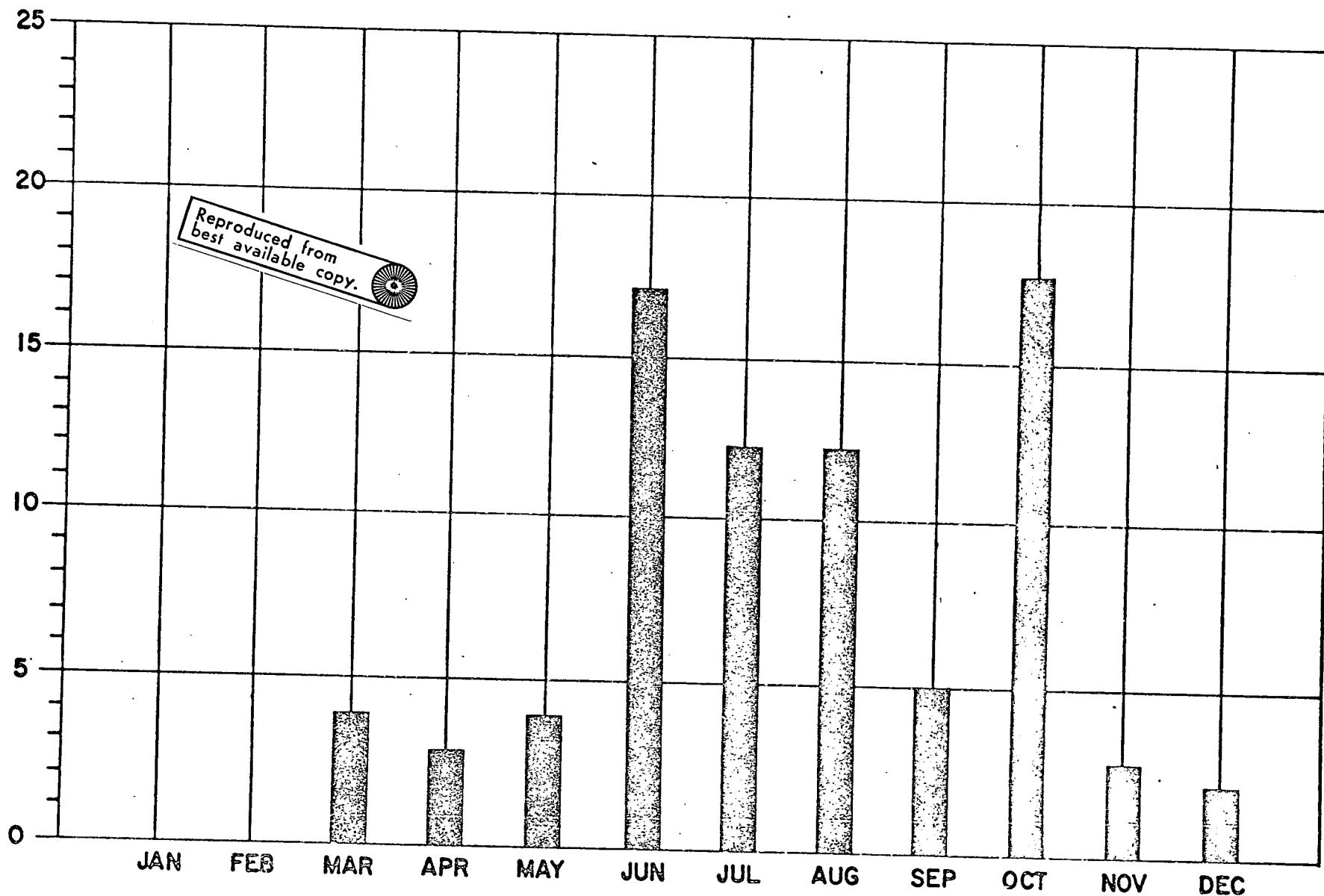
Station 39Z01. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 Near Site 2, Pyrotechnic Building

Table 2-5. 1971 Summary of Measurement Station
39X01 at Site 3, FCA Road

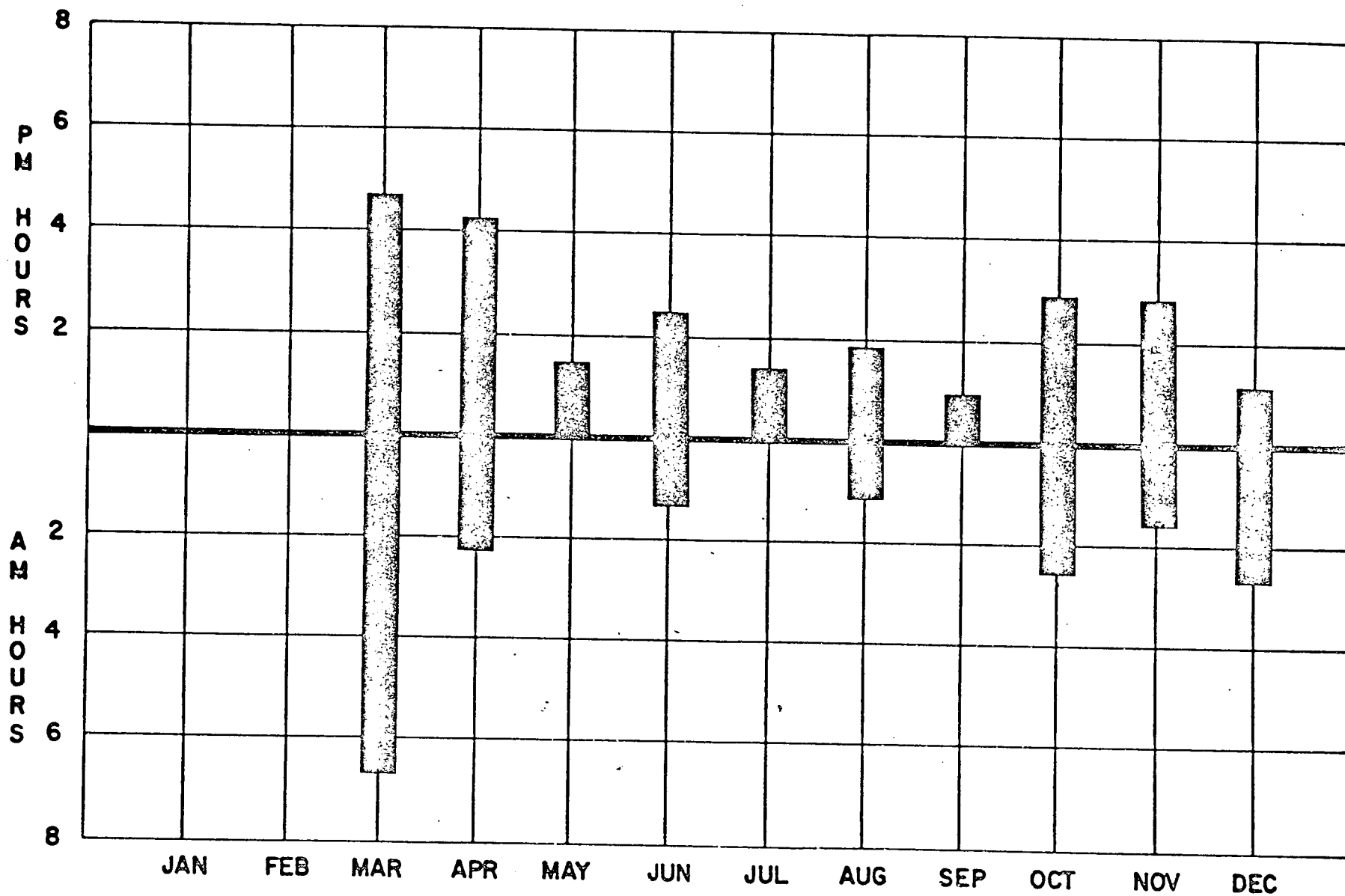
M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M.			KV/M FOR P.M.			TOTAL HOURS DATA UNAVAILABLE
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	00	00	00	00	000.0	000.0	00.0	00.0	00	00.0	00	00	00.0	00	743.4
FEB	00	00	00	00	000.0	000.0	00.0	00.0	00	00.0	00	00	00.0	00	671.5
MAR	04	00	03	03	020.2	014.2	06.7	04.7	04	11.2	15	04	08.3	15	103.9
APR	03	00	02	02	004.7	008.7	02.3	04.3	03	06.2	09	03	09.0	15	000.0
MAY	04	00	00	04	000.0	006.2	00.0	01.5	00	00.0	00	03	08.5	15	134.6
JUN	17	07	04	16	005.5	041.2	01.3	02.5	03	03.6	05	05	10.4	15	206.0
JUL	12	05	00	12	000.0	017.5	00.0	01.4	00	00.0	00	04	09.1	15	000.0
AUG	12	07	02	12	002.2	022.0	01.1	01.8	15	15.0	15	04	10.3	15	000.0
SEP	05	00	00	05	000.0	004.7	00.0	00.9	00	00.0	00	03	07.0	09	000.0
OCT	18	04	13	14	034.9	041.5	02.6	02.9	03	07.3	15	03	09.1	15	000.0
NOV	03	02	02	02	003.2	005.7	01.6	02.8	06	12.0	15	09	13.2	15	023.9
DEC	02	00	01	02	002.7	002.2	02.7	01.1	15	15.0	15	15	15.0	15	023.9

2-14

DAYS



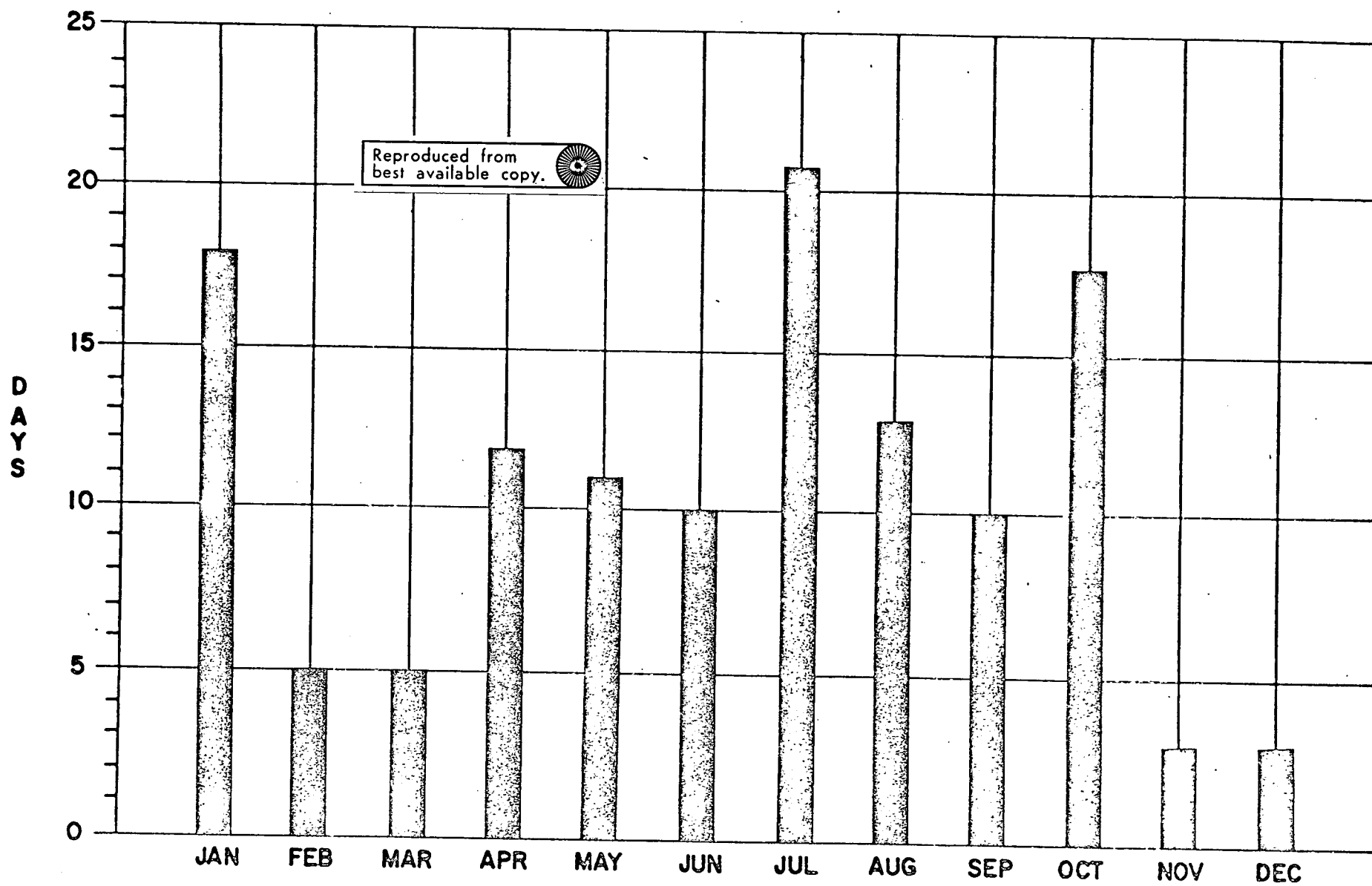
Station 39X01. Potential Gradient Activity Days per Month
in 1971 at Site 3, FCA Road



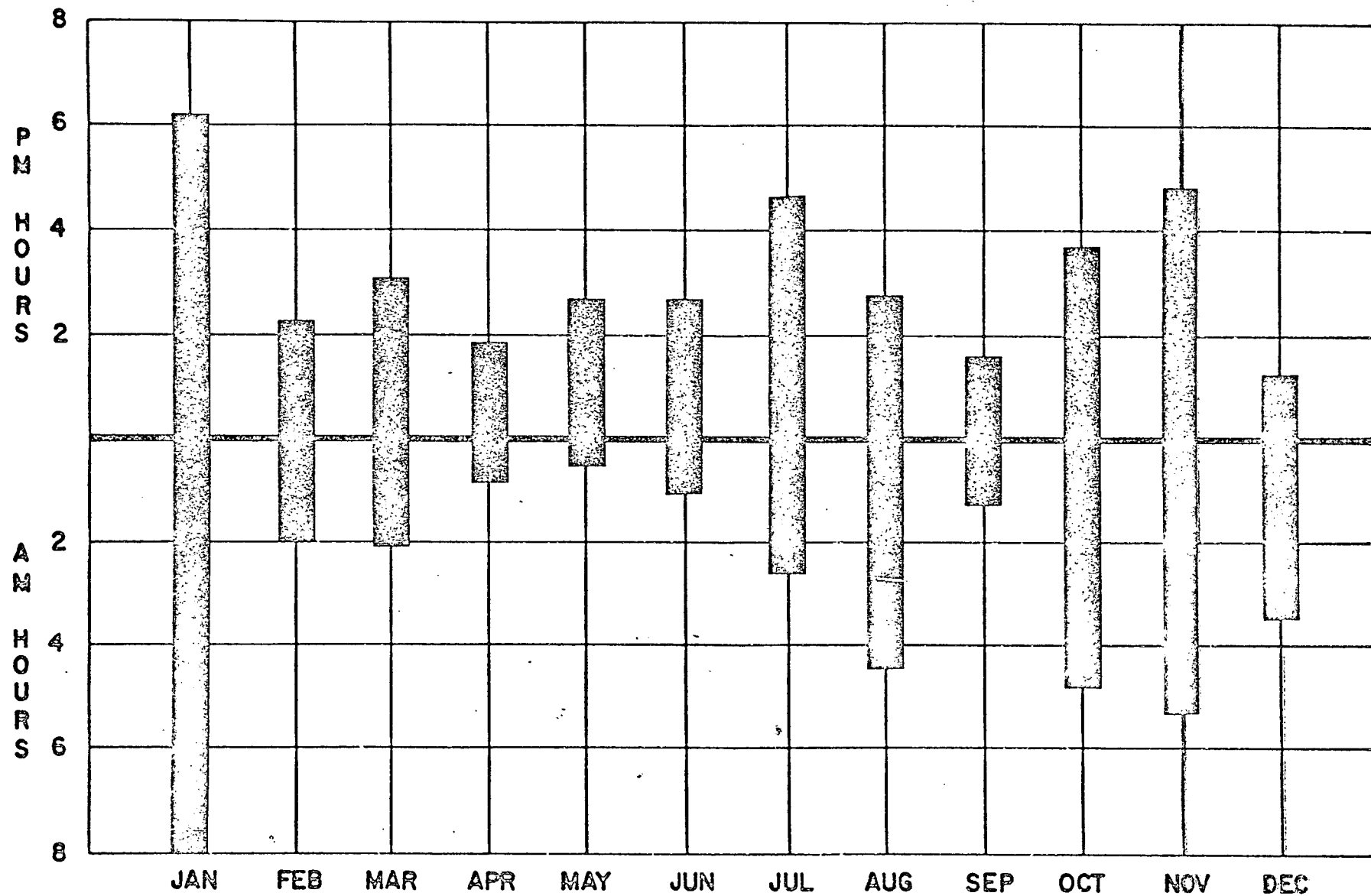
Station 39X01. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 at Site 3, FCA Road

Table 2-6. 1971 Summary of Measurement Station
39X03 at Site 4, Sharkey Road

M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M. ACTIVITY DAYS			KV/M FOR P.M. ACTIVITY DAYS			TOTAL HOURS DATA UNAVAILABLE
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	18	01	15	16	122.3	098.2	08.1	06.1	04	05.2	07	03	05.2	07	000.0
FEB	05	02	03	04	006.0	009.0	02.0	02.2	03	08.6	15	03	06.7	13	000.0
MAR	06	02	04	03	008.5	009.5	02.1	03.1	03	08.4	15	03	10.2	15	064.2
APR	12	01	08	06	006.9	011.7	00.8	01.9	03	03.5	06	03	05.4	09	000.0
MAY	11	06	03	10	001.5	026.7	00.5	02.6	03	05.4	12	03	10.1	15	000.0
JUN	10	05	01	10	001.2	026.7	01.2	02.6	04	05.5	08	03	07.2	15	404.4
JUL	21	13	11	17	028.7	079.5	02.6	04.6	03	05.4	15	03	08.6	15	000.0
AUG	13	06	03	13	013.7	036.7	04.5	02.8	03	10.4	15	04	10.6	15	000.0
SEP	10	03	02	08	002.7	013.2	01.3	01.6	04	06.4	09	03	09.4	15	000.0
OCT	18	04	14	17	069.6	063.0	04.9	03.7	03	07.2	15	03	07.5	15	023.9
NOV	07	02	06	07	032.7	033.7	05.4	04.8	03	05.3	09	03	07.6	15	016.4
DEC	03	03	01	03	003.5	003.7	03.5	01.2	15	15.0	15	15	15.0	15	000.0



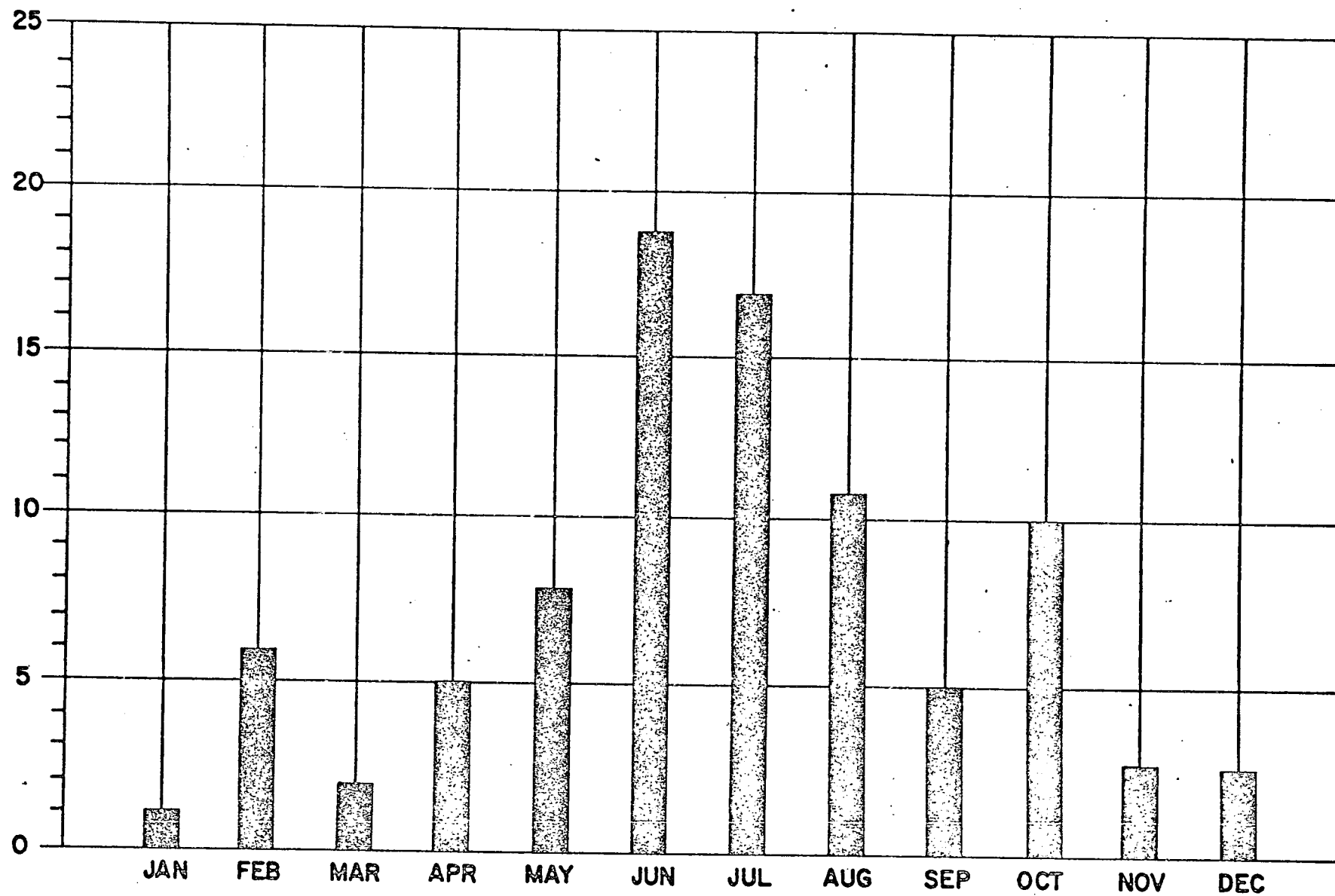
Station 39X03. Potential Gradient Activity Days per Month
in 1971 at Site 4, Sharkey Road



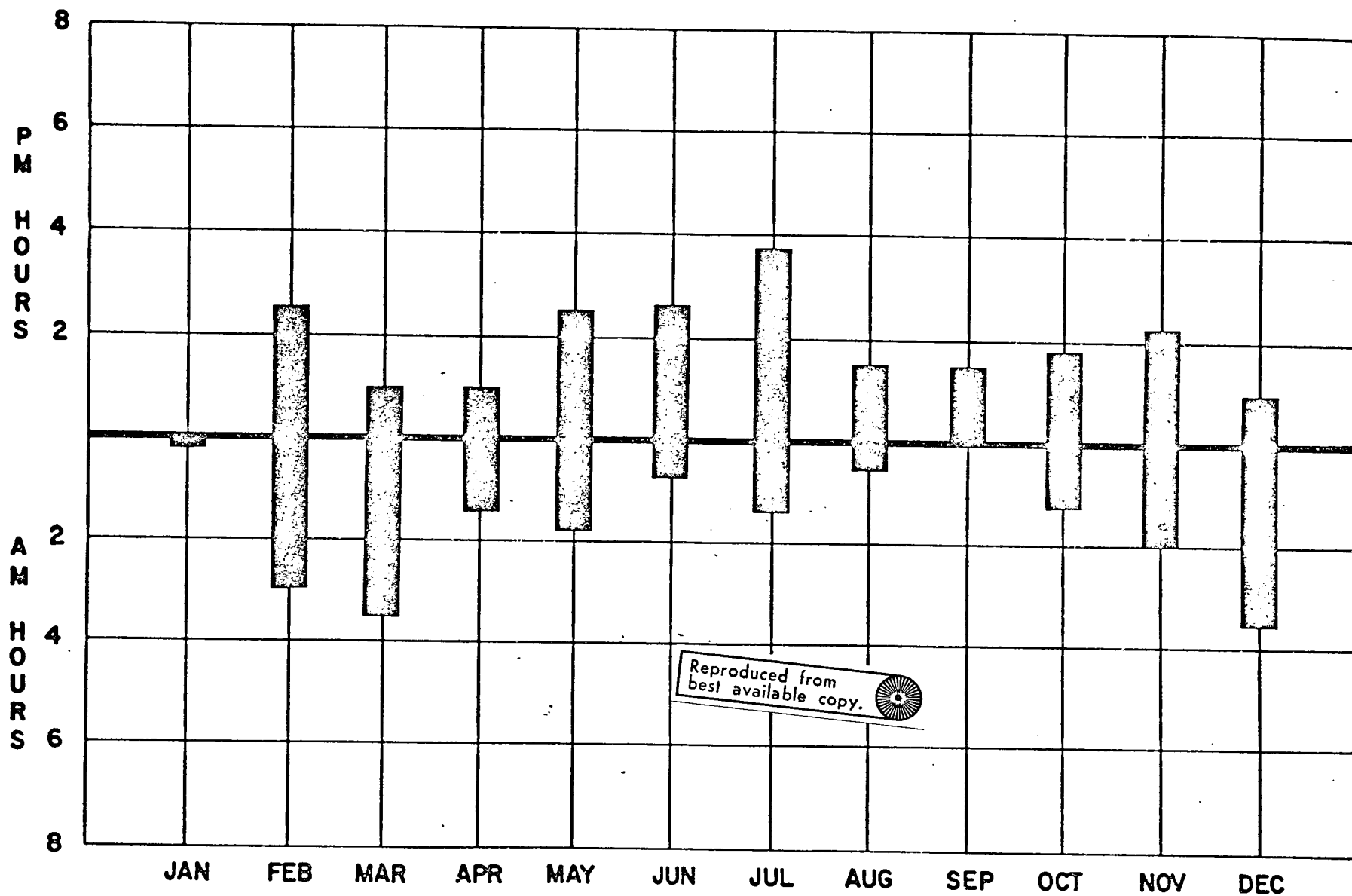
Station 39X03. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 at Site 4, Sharkey Road

Table 2-7. 1971 Summary of Measurement Station
39X05 at Site 5, Wilson Intersection

M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M.			KV/M FOR P.M.			TOTAL HOURS DATA UNAVAILABLE
									ACTIVITY	DAYS		ACTIVITY	DAYS		
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	01	00	01	00	000.2	000.0	00.2	00.0	03	03.0	03	00	00.0	00	000.0
FEB	06	05	02	05	005.9	012.5	02.9	02.5	03	09.5	15	03	07.2	14	000.0
MAR	02	02	01	01	003.5	001.0	03.5	01.0	06	08.6	15	15	15.0	15	388.7
APR	05	01	04	04	005.7	004.2	01.4	01.0	03	07.3	12	04	09.5	15	000.0
MAY	08	06	02	08	003.7	021.2	01.8	02.6	03	03.4	04	03	07.1	15	000.0
JUN	19	14	01	19	000.7	049.5	00.7	02.6	07	10.0	15	03	08.7	15	000.0
JUL	17	13	04	16	005.7	061.5	01.4	03.8	03	04.4	06	03	11.2	15	000.0
AUG	11	05	03	11	001.5	017.0	00.5	01.5	08	10.5	15	03	09.4	15	000.0
SEP	05	03	00	05	000.0	007.7	00.0	01.5	00	00.0	00	04	10.5	15	000.0
OCT	10	06	04	09	005.2	017.0	01.3	01.8	05	08.2	15	04	09.0	15	000.0
NOV	03	02	02	03	004.0	006.7	02.0	02.2	03	05.6	10	03	07.0	12	016.2
DEC	03	02	01	03	003.5	003.0	03.5	01.0	09	09.0	09	09	12.0	15	000.0



Station 39X05. Potential Gradient Activity Days per Month
in 1971 at Site 5, Wilson Intersection

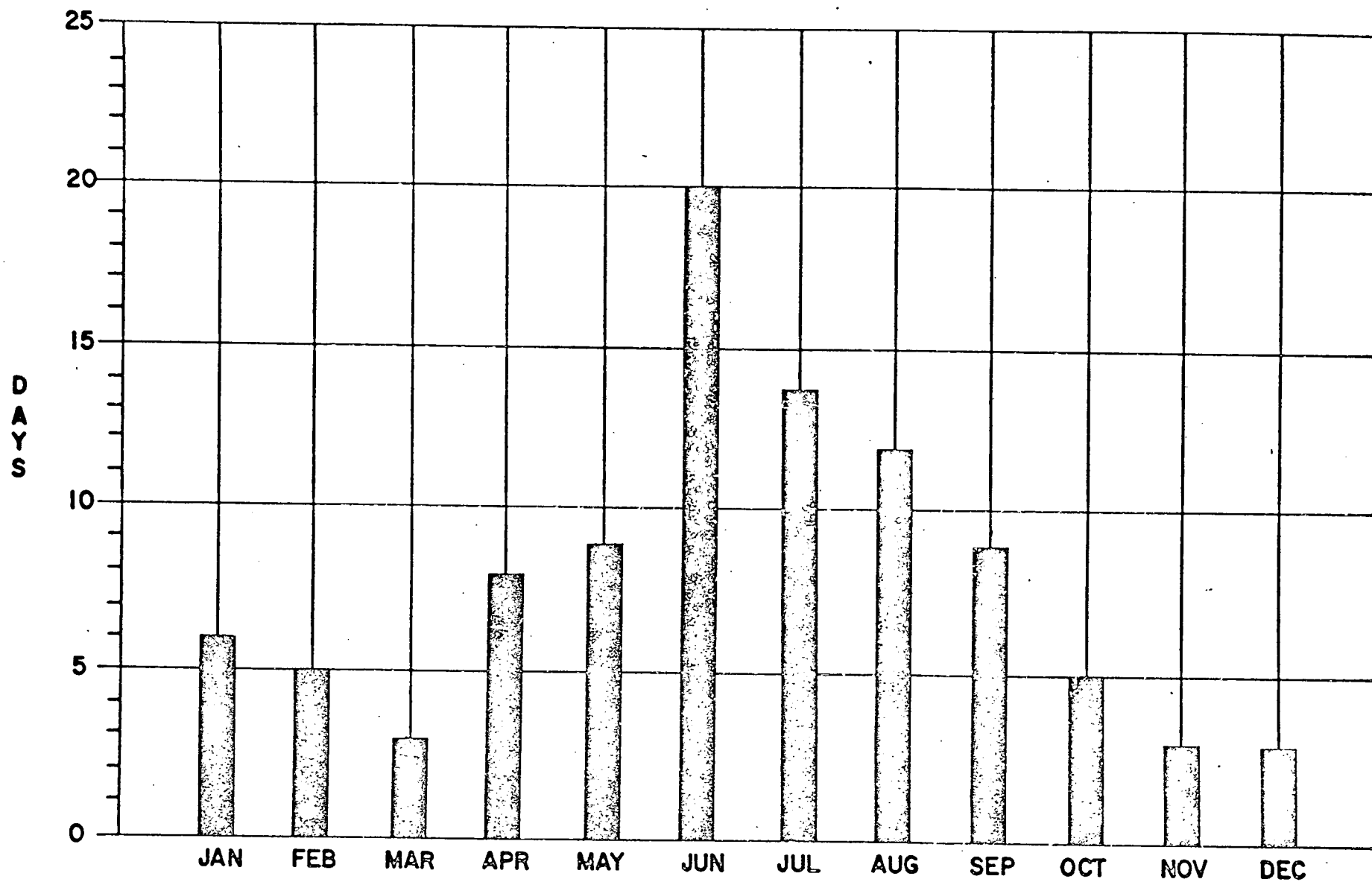


Station 39X05. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 at Site 5, Wilson Intersection

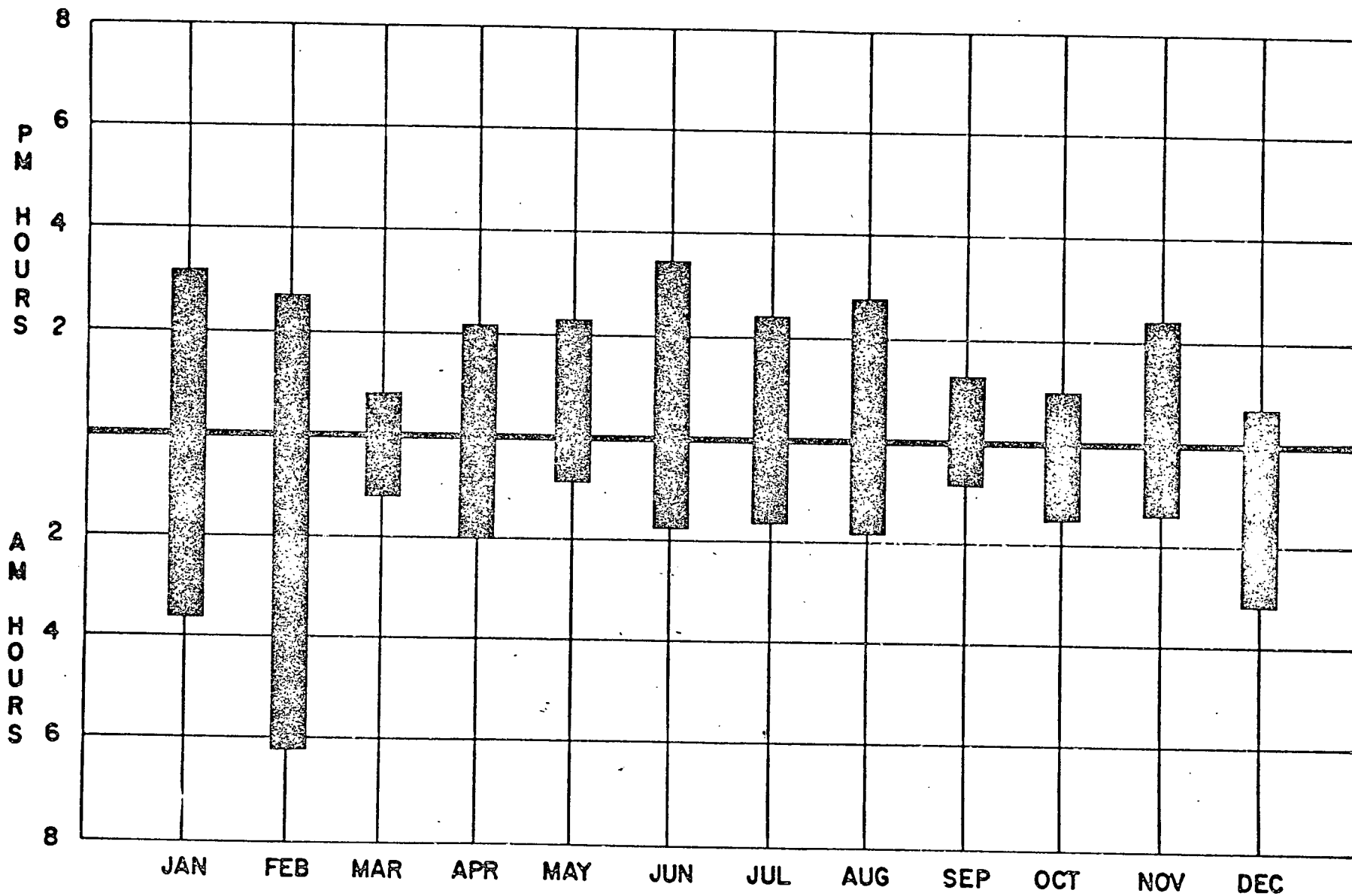
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Table 2-8. 1971 Summary of Measurement Station
39X07 at Site 6, Playalinda

M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M. ACTIVITY DAYS			KV/M FOR P.M. ACTIVITY DAYS			TOTAL HOURS DATA UNAVAILABLE
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	06	00	05	05	018.7	015.5	03.7	03.1	03	03.6	05	03	04.0	07	000.0
FEB	05	04	02	04	012.7	011.0	06.3	02.7	04	12.3	15	03	12.0	15	000.0
MAR	03	01	01	02	001.2	001.7	01.2	00.8	05	05.2	06	05	09.2	14	064.2
APR	08	00	06	07	012.4	016.0	02.0	02.2	03	07.0	14	03	05.7	12	002.2
MAY	09	08	01	08	000.9	018.7	00.9	02.3	06	10.4	15	05	10.5	15	000.0
JUN	20	14	06	18	005.2	064.2	00.8	03.5	03	07.5	15	03	09.7	15	000.0
JUL	14	05	02	12	001.4	028.5	00.7	02.3	07	08.0	09	03	09.2	15	053.9
AUG	12	06	03	11	005.9	031.0	01.9	02.8	10	13.1	15	04	10.1	15	000.0
SEP	09	04	03	07	002.7	010.2	00.9	01.4	03	07.2	15	05	10.1	15	000.0
OCT	05	01	01	04	001.5	005.1	01.5	01.2	03	03.0	03	03	07.1	15	053.7
NOV	03	01	02	03	002.7	007.5	01.3	02.5	03	03.4	04	03	08.4	15	015.9
DEC	03	02	02	02	006.5	001.7	03.2	00.8	05	10.0	15	15	15.0	15	000.0



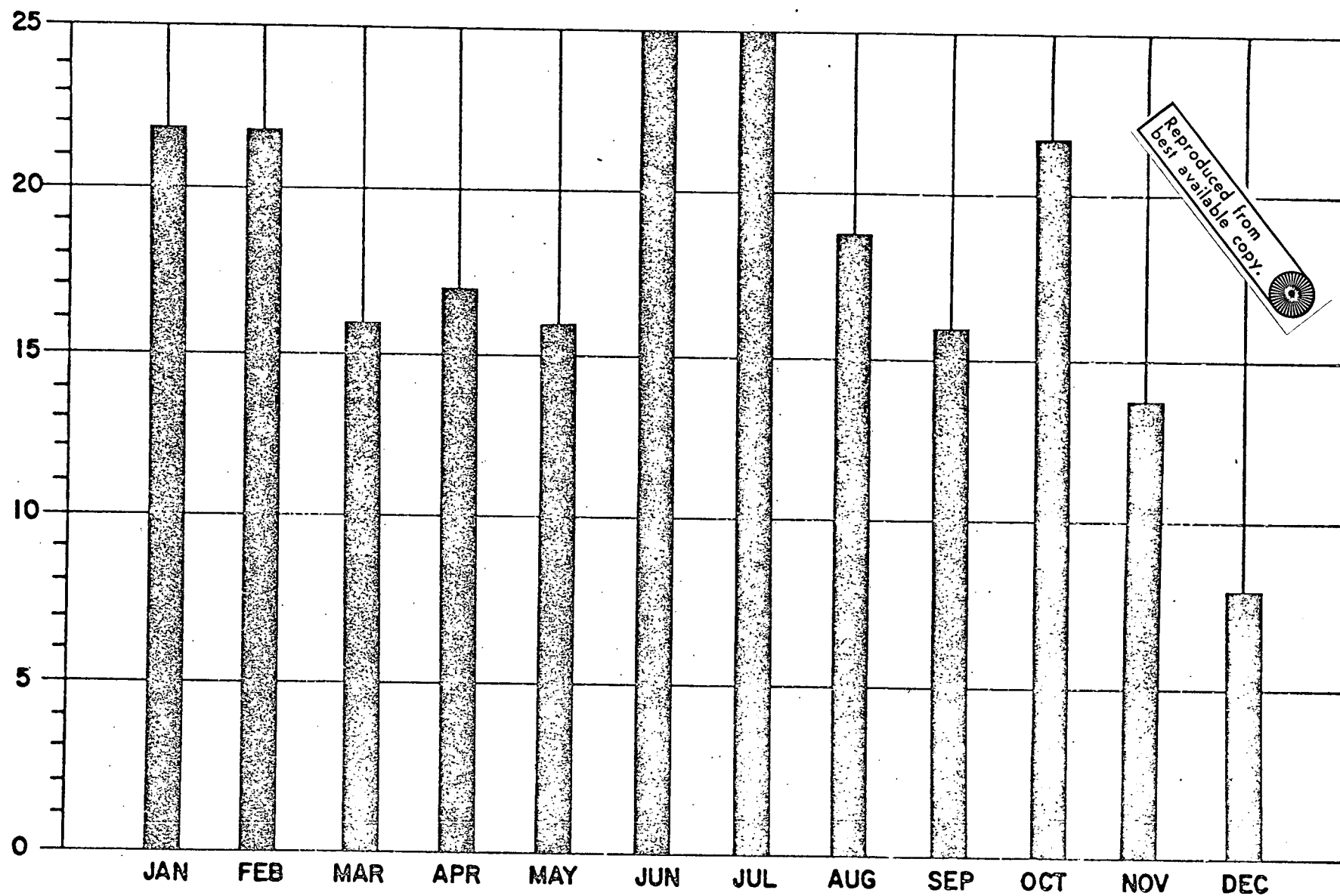
Station 39X07. Potential Gradient Activity Days per Month
in 1971 at Site 6, Playalinda



Station 39X07. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 at Site 6, Playalinda

Table 2-9. 1971 Summary of Measurement Station
39L01 at Site 7, VAB Roof

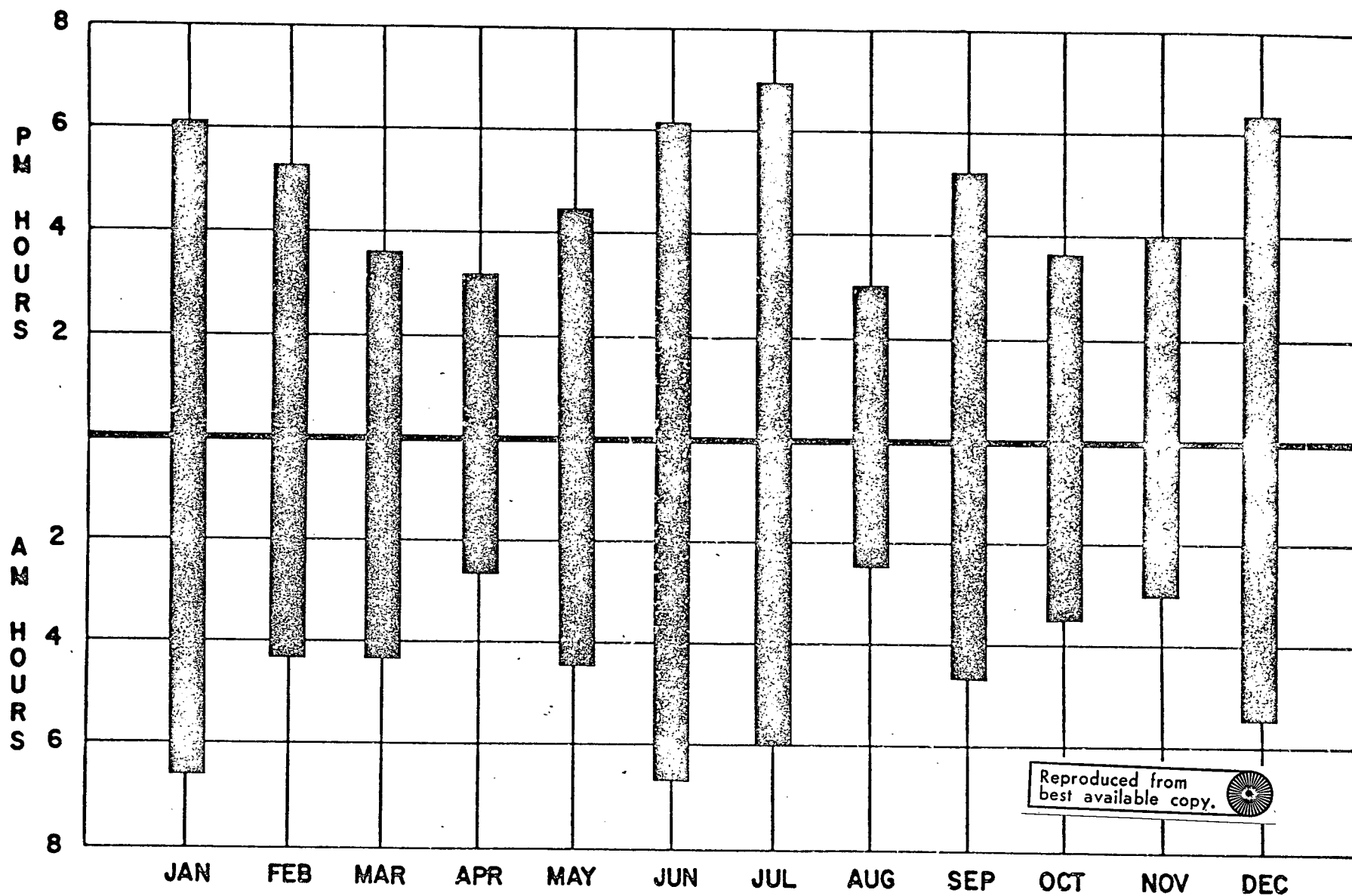
M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M. ACTIVITY DAYS			KV/M FOR P.M. ACTIVITY DAYS			TOTAL HOURS DATA UNAVAILABLE
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	22	00	22	21	149.1	129.5	06.7	06.1	03	05.7	13	03	06.0	13	000.7
FEB	21	06	19	19	084.4	102.2	04.4	05.3	03	06.5	15	03	07.7	15	000.0
MAR	16	04	12	11	053.0	040.5	04.4	03.6	04	07.3	15	03	07.0	15	064.2
APR	17	02	10	15	026.2	050.2	02.6	03.3	04	06.4	13	03	06.6	15	000.0
MAY	16	07	08	16	036.5	073.0	04.5	04.5	04	08.2	15	03	10.2	15	000.0
JUN	24	18	17	24	115.6	147.5	06.8	06.1	03	06.5	15	03	11.3	15	000.0
JUL	26	17	23	23	139.3	163.0	06.0	07.0	03	06.7	15	03	11.1	15	006.0
AUG	19	04	07	19	017.2	060.7	02.4	03.1	03	09.3	15	03	11.2	15	000.0
SEP	17	03	11	16	051.2	086.0	04.6	05.3	03	04.6	15	03	08.1	15	000.0
OCT	23	08	20	17	068.4	064.0	03.4	03.7	03	09.6	15	03	12.0	15	023.9
NOV	14	02	15	12	044.0	048.7	02.9	04.0	03	07.7	15	03	07.0	15	034.2
DEC	08	03	06	07	033.4	044.2	05.5	06.3	03	08.6	15	03	08.1	15	000.0

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Station 39L01. Potential Gradient Activity Days per Month
in 1971 at Site 7, VAB Roof

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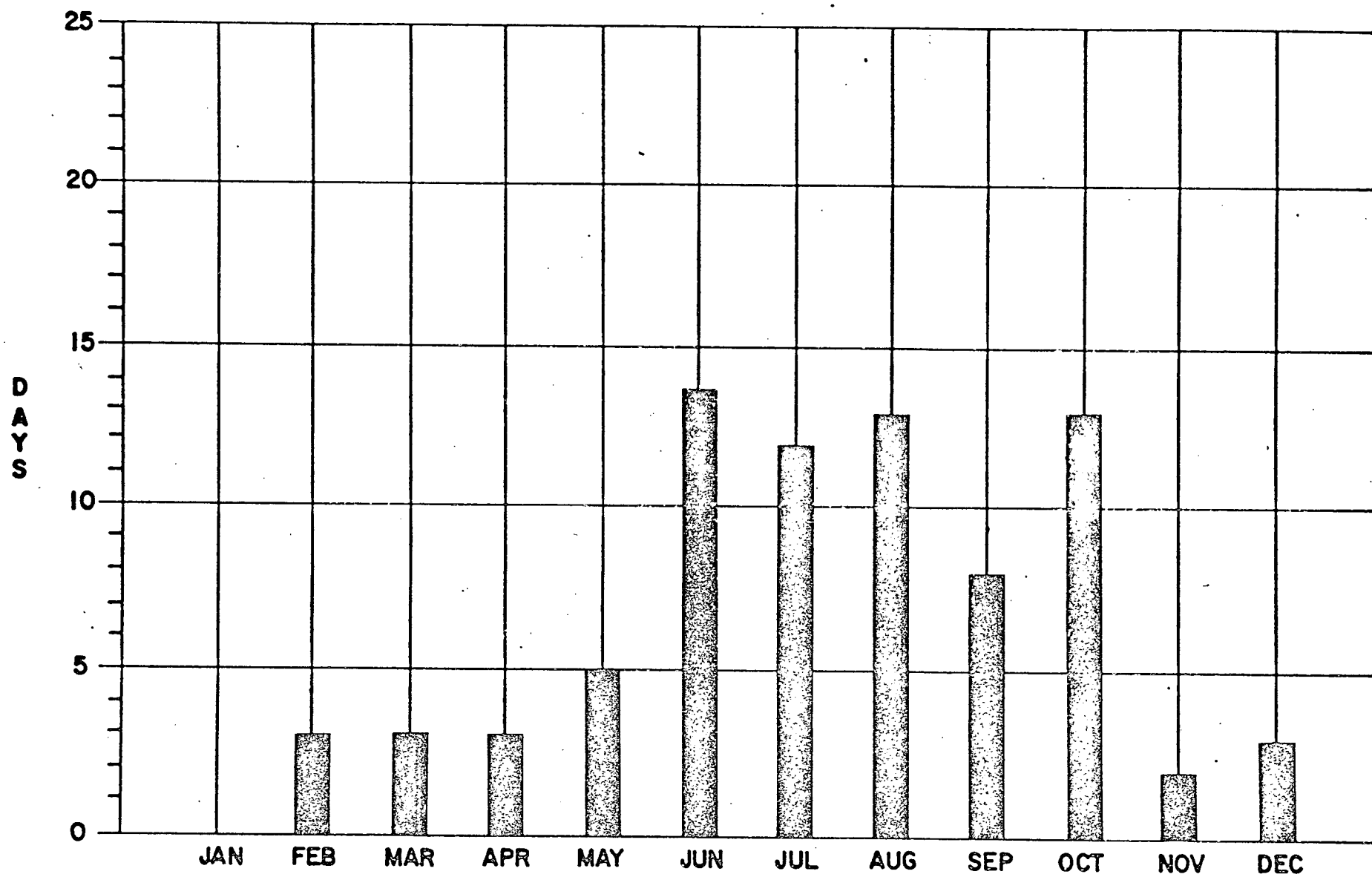
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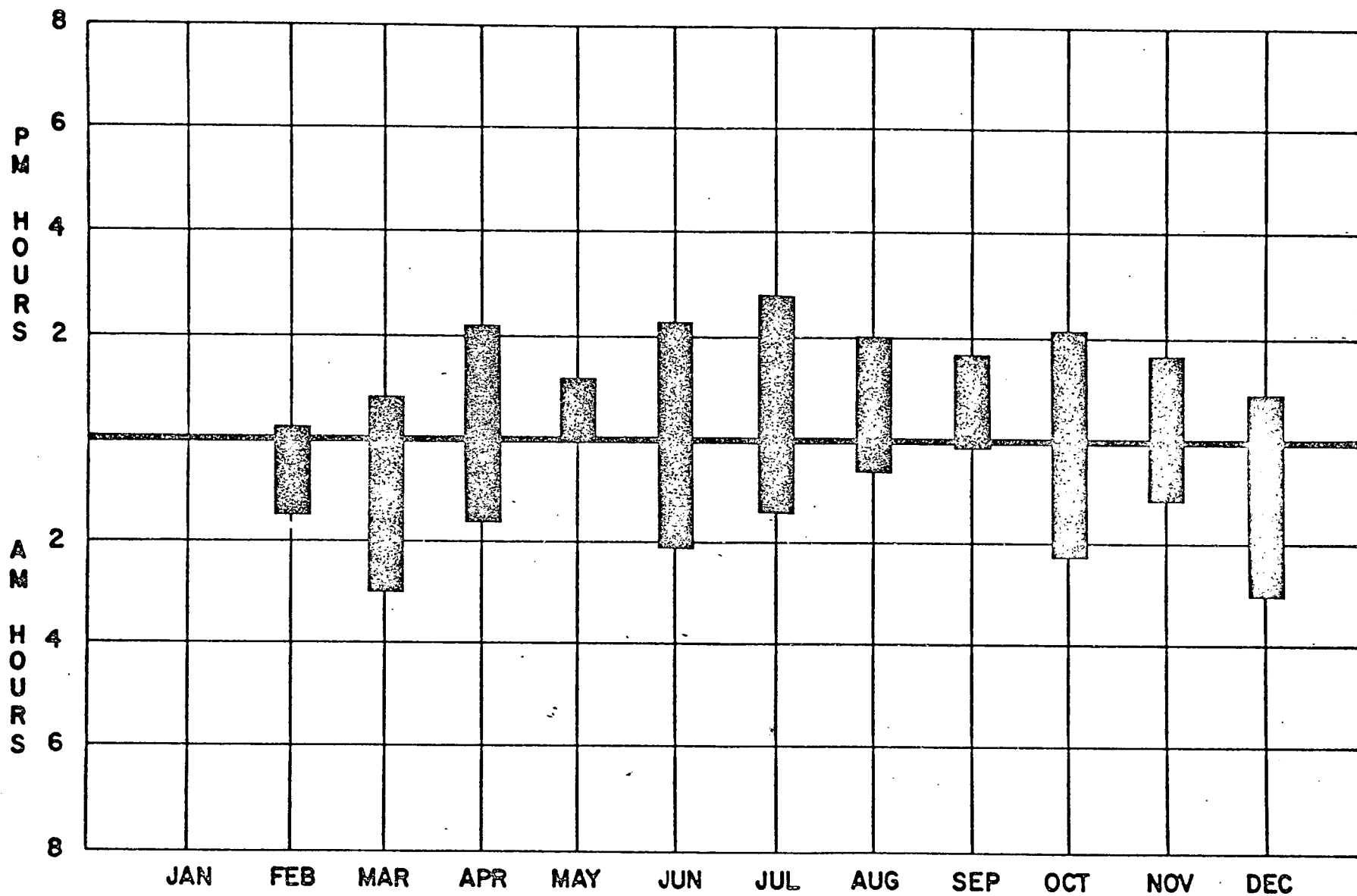
Station 39L01. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 at Site 7, VAB Roof

Table 2-10. 1971 Summary of Measurement Station
39K15 at Site 8, LC-39 Pad A

M O N T H	POT GRAD ACT DAYS	LTG ACT DAYS	POT GRAD A.M. ACT DAYS	POT GRAD P.M. ACT DAYS	POT GRAD A.M. ACT HRS	POT GRAD P.M. ACT HRS	AVG A.M. HRS PER DAYS	AVG P.M. HRS PER DAYS	KV/M FOR A.M. ACTIVITY DAYS			KV/M FOR P.M. ACTIVITY DAYS			TOTAL HOURS DATA UNAVAILABLE
									MIN	AVG	MAX	MIN	AVG	MAX	
JAN	00	00	00	00	000.0	000.0	00.0	00.0	00	00.0	00	00	00.0	00	001.2
FEB	03	03	02	02	003.0	000.5	01.5	00.2	07	07.6	08	05	06.0	07	000.0
MAR	03	02	02	02	006.2	001.7	03.1	00.8	05	07.5	10	09	10.0	11	063.9
APR	03	01	01	02	001.7	004.2	01.7	02.1	04	04.0	04	03	05.5	08	000.0
MAY	05	03	00	05	000.0	005.5	00.0	01.1	00	00.0	00	03	07.0	10	053.7
JUN	14	07	02	14	004.5	031.7	02.2	02.2	04	05.4	07	03	07.5	15	000.0
JUL	12	08	02	10	003.0	028.2	01.5	02.8	03	06.6	12	03	05.6	11	065.4
AUG	13	05	03	12	002.2	024.7	00.7	02.0	06	08.2	15	05	09.5	15	000.0
SEP	08	03	01	07	000.2	011.5	00.2	01.6	04	04.0	04	05	09.4	15	000.0
OCT	13	04	10	09	023.9	019.0	02.3	02.1	03	06.6	12	03	08.2	15	023.9
NOV	03	02	02	02	002.7	003.0	01.3	01.5	03	05.2	07	05	09.4	15	015.9
DEC	03	00	01	03	003.2	002.5	03.2	00.8	09	09.0	09	08	09.5	12	000.0



Station 39K15. Potential Gradient Activity Days per Month
in 1971 at Site 8, LC-39 Pad A



Station 39K15. AM and PM Distribution of Potential Gradient Activity Hours per Month in 1971 at Site 8, LC-39 Pad A

SECTION III LIGHTNING SUMMARY

3.1 GENERAL

This section presents a compilation of lightning activity recorded during the time periods of 1903 through 1924, 1957 through 1962 and 1964 through 1971.

3.2 ALEXANDER RECORDS 1903-1924

Table 3-1 lists lightning activity data taken from the Alexander records (ref 1) for the period 1903 through 1924.

Table 3-1. Data for 1903-1924

Month	Average Activity Days
Jan	0.0
Feb	1.5
Mar	2.0
Apr	3.0
May	7.0
Jun	12.0
Jul	15.0
Aug	17.5
Sep	12.5
Oct	3.3
Nov	0.8
Dec	1.0

3.3 ISOKERAUNIC DATA 1957-1962

An isokeraunic level is an index of the number of thunderstorm days per year as defined by days on which thunder was heard. Table 3-2 lists the isokeraunic levels at Patrick AFB from 1957 through 1962 (ref 2).

Table 3-2. Data for 1957-1962

Month	Average Activity Days
Jan	0.5
Feb	1.8
Mar	3.7
Apr	3.3
May	6.7
Jun	14.0
Jul	13.8
Aug	15.8
Sep	10.8
Oct	3.8
Nov	0.7
Dec	0.7

Figure 3-1 is an example of an isokeraunic map of the United States (ref 3). As shown, the incidence of lightning activity varies throughout the states being lowest at the Canadian border and Pacific coast and highest over the gulf coast of Florida.

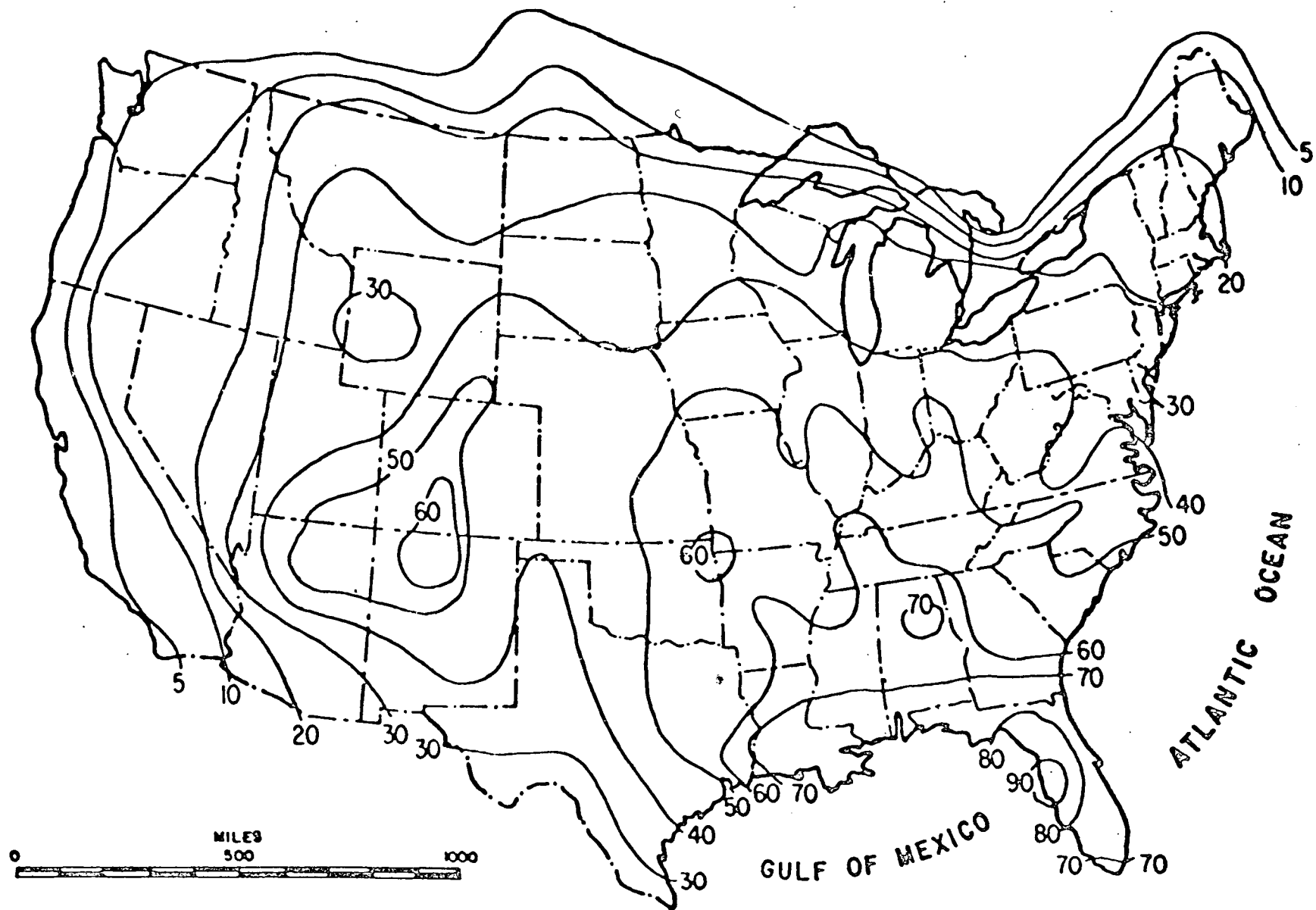


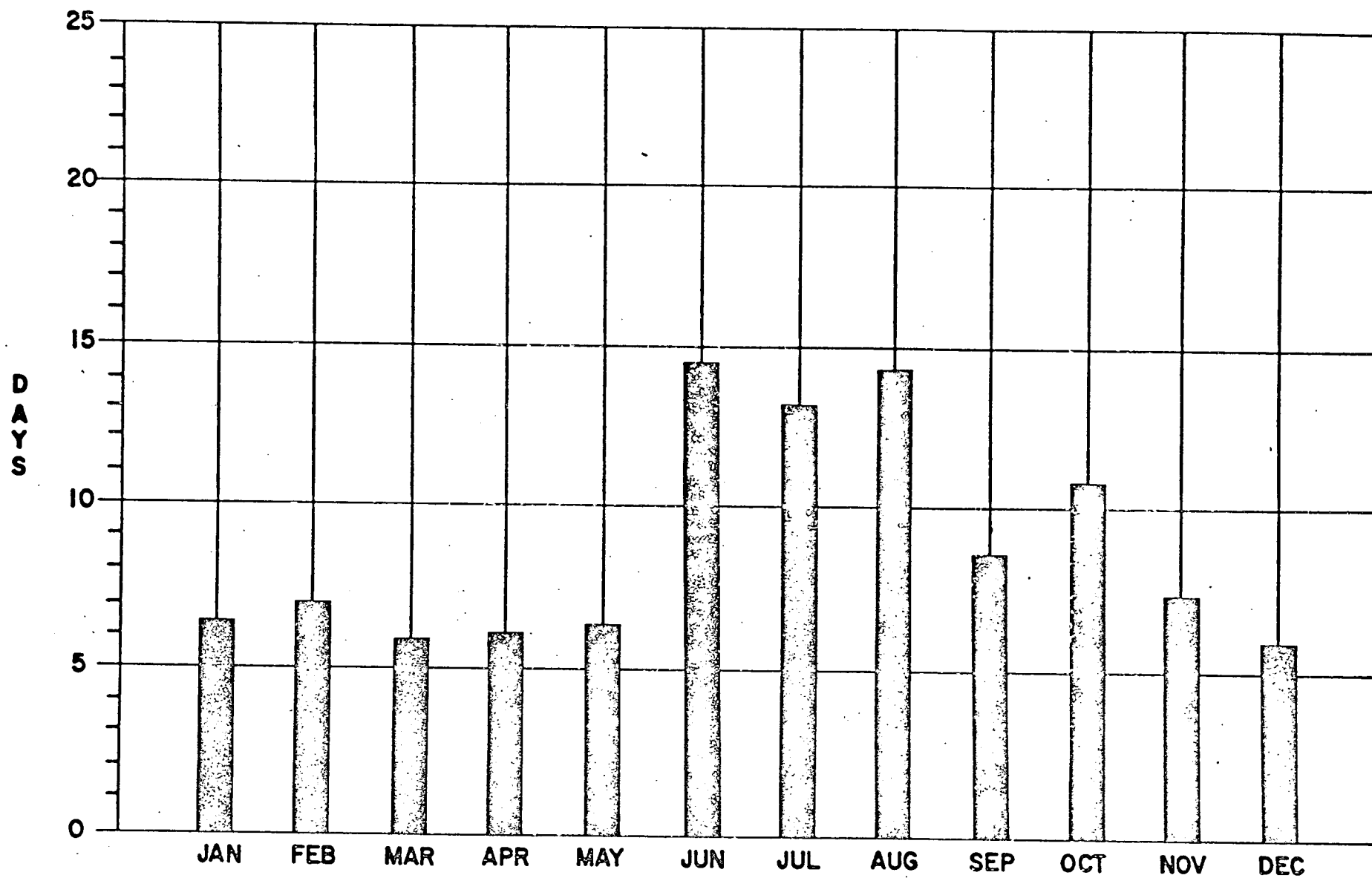
Figure 3-1. Isokeraunic Map of the United States

3.4 LIGHTNING DATA 1964-1971

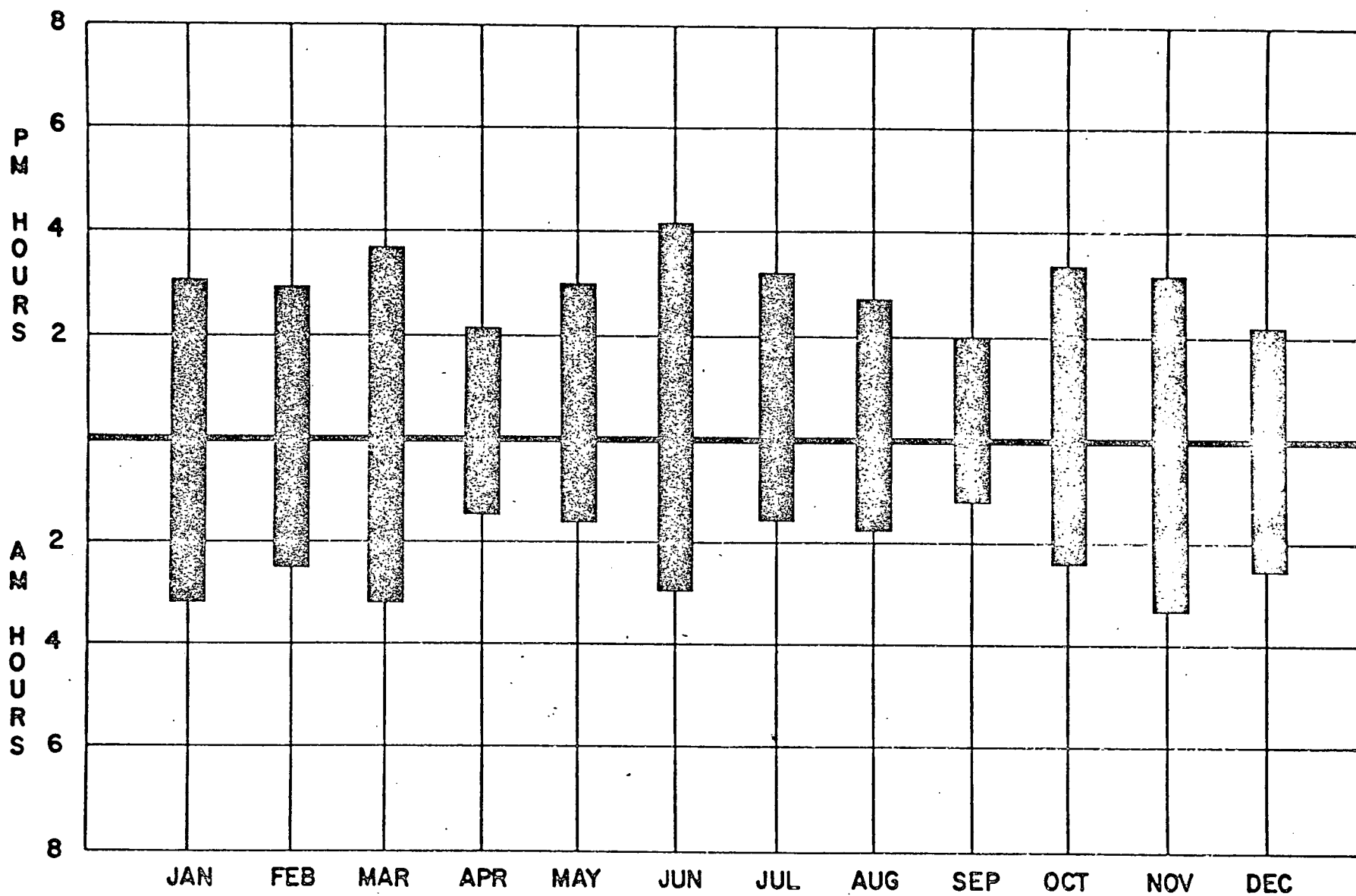
The following tables and data charts present lightning activity records for the KSC launch area, 1968 through 1971; KSC industrial area, 1965 through 1971; and CKAFS, 1964 through 1971.

Table 3-3. Summary of Average Activity Days
per Month, KSC Launch Area 1968-1971

Month	Potential Gradient Activity Days	Lightning Activity Days
Jan	6.7	1.0
Feb	7.0	2.6
Mar	6.0	2.7
Apr	6.2	1.0
May	6.4	2.5
Jun	14.7	8.0
Jul	13.1	8.6
Aug	14.4	8.6
Sep	8.5	4.7
Oct	10.7	4.0
Nov	7.1	2.3
Dec	5.8	3.8



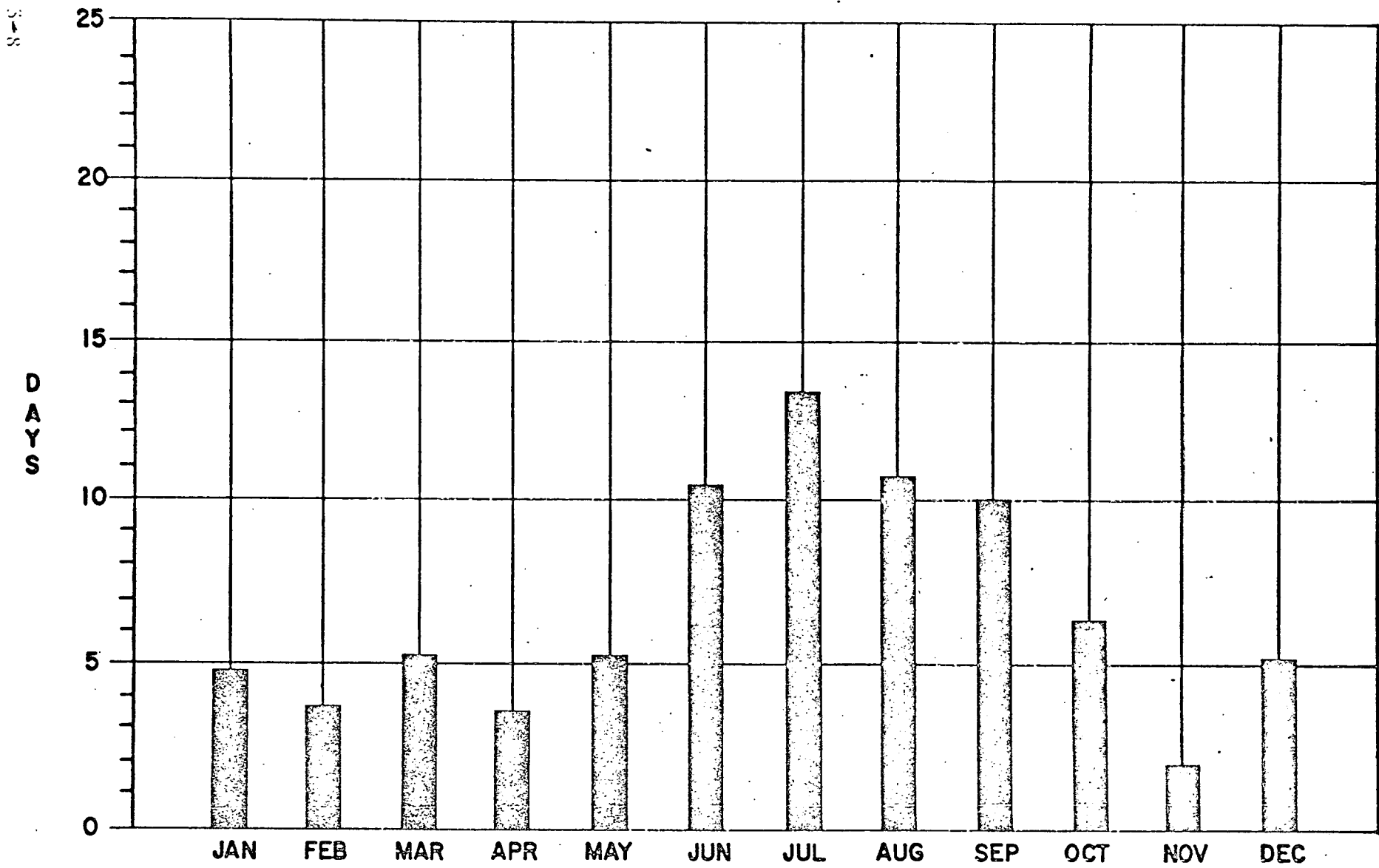
Average of Potential Gradient Activity Days per Month,
KSC Launch Area 1968 through 1971



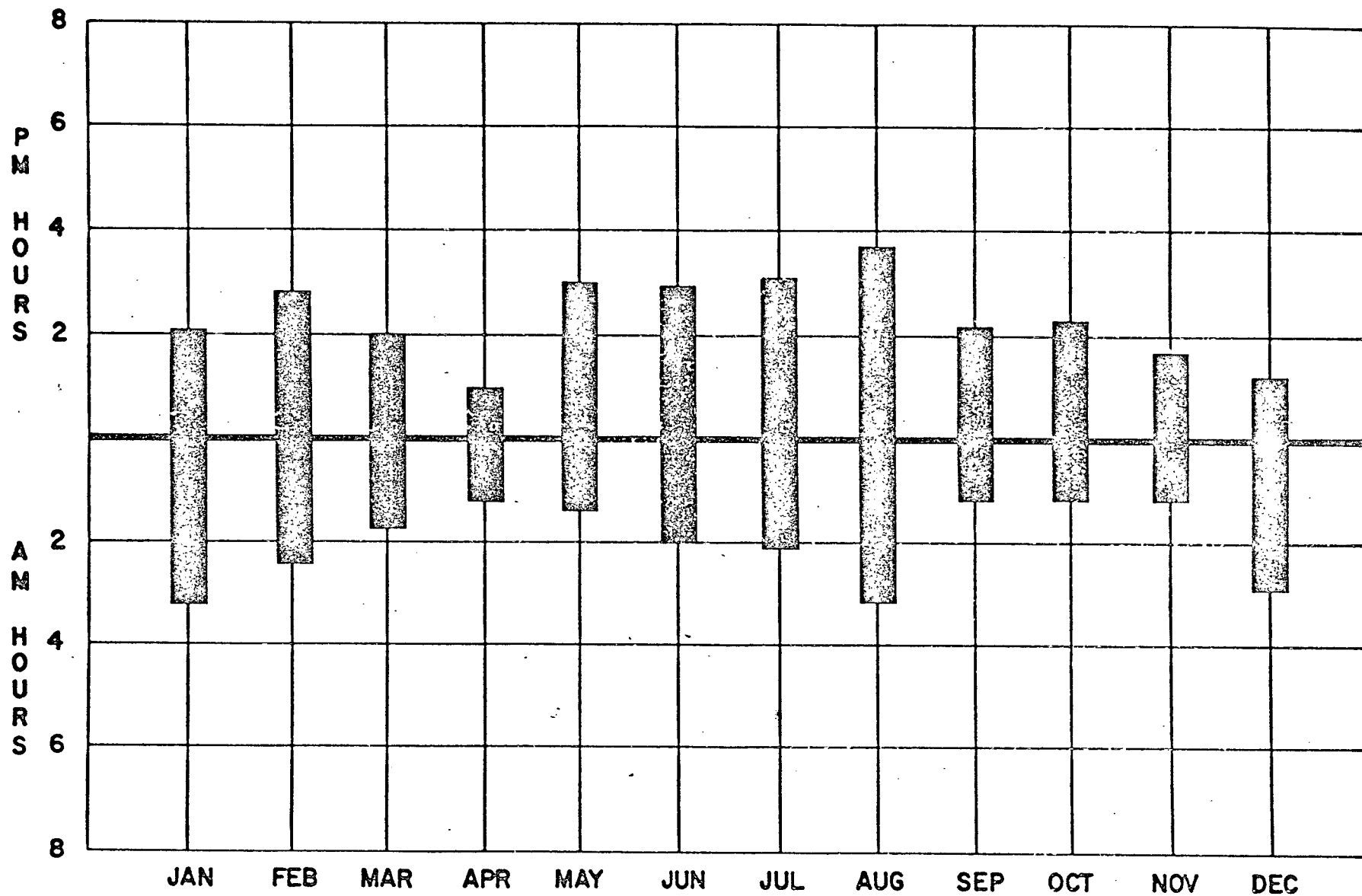
AM and PM Distribution of Average Potential Gradient Activity
Hours per Month, KSC Launch Area 1968 through 1971

Table 3-4. Summary of Average Activity Days per Month, KSC Industrial Area 1965-1971

Month	Potential Gradient Activity Days	Lightning Activity Days
Jan	4.8	0.6
Feb	3.5	1.8
Mar	5.2	3.1
Apr	3.4	1.0
May	5.2	4.2
Jun	11.3	7.3
Jul	13.4	10.1
Aug	10.7	8.3
Sep	10.0	5.6
Oct	6.6	3.4
Nov	2.1	0.9
Dec	5.1	2.8



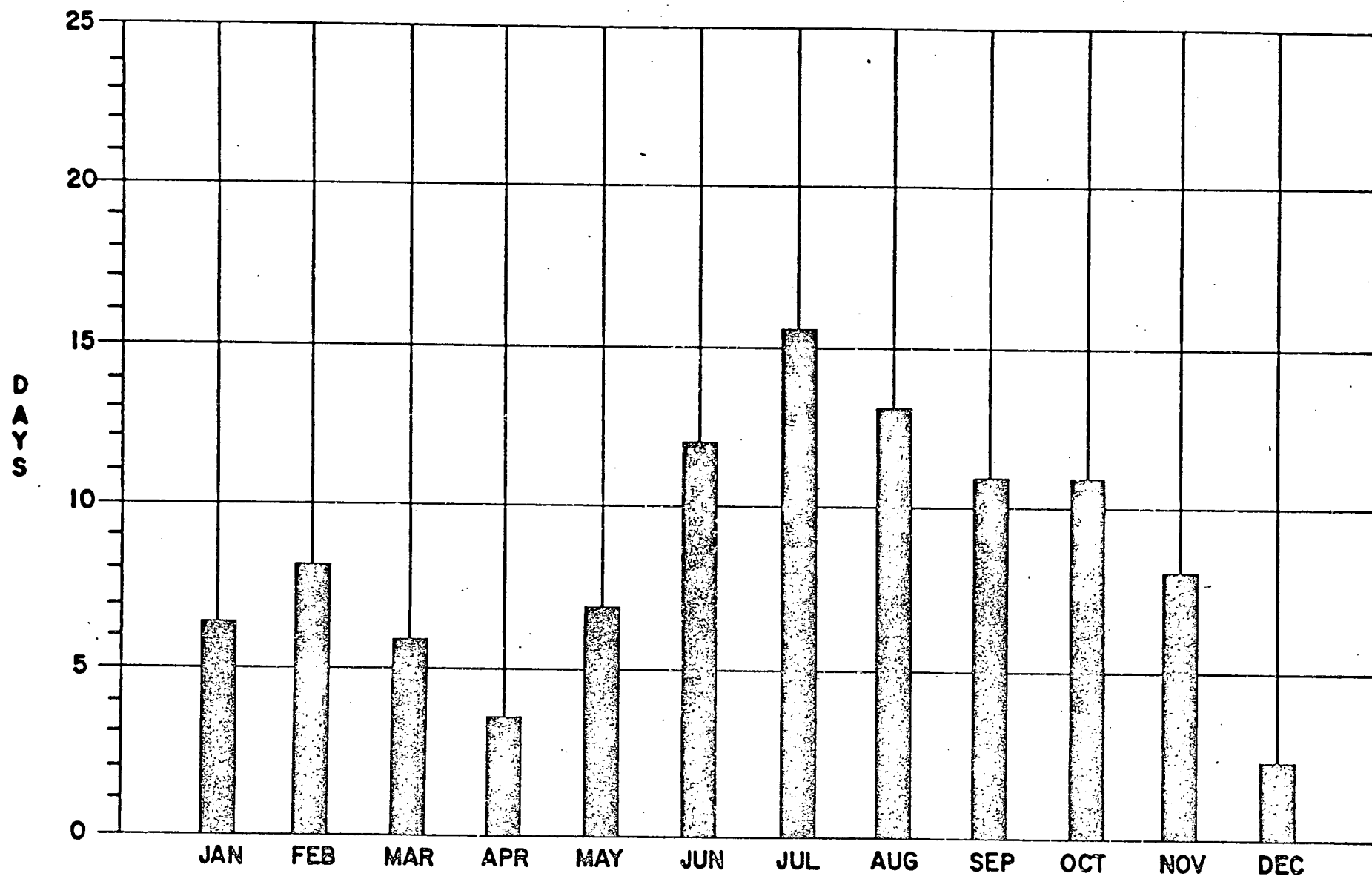
Average of Potential Gradient Activity Days per Month,
KSC Industrial Area 1965 through 1971



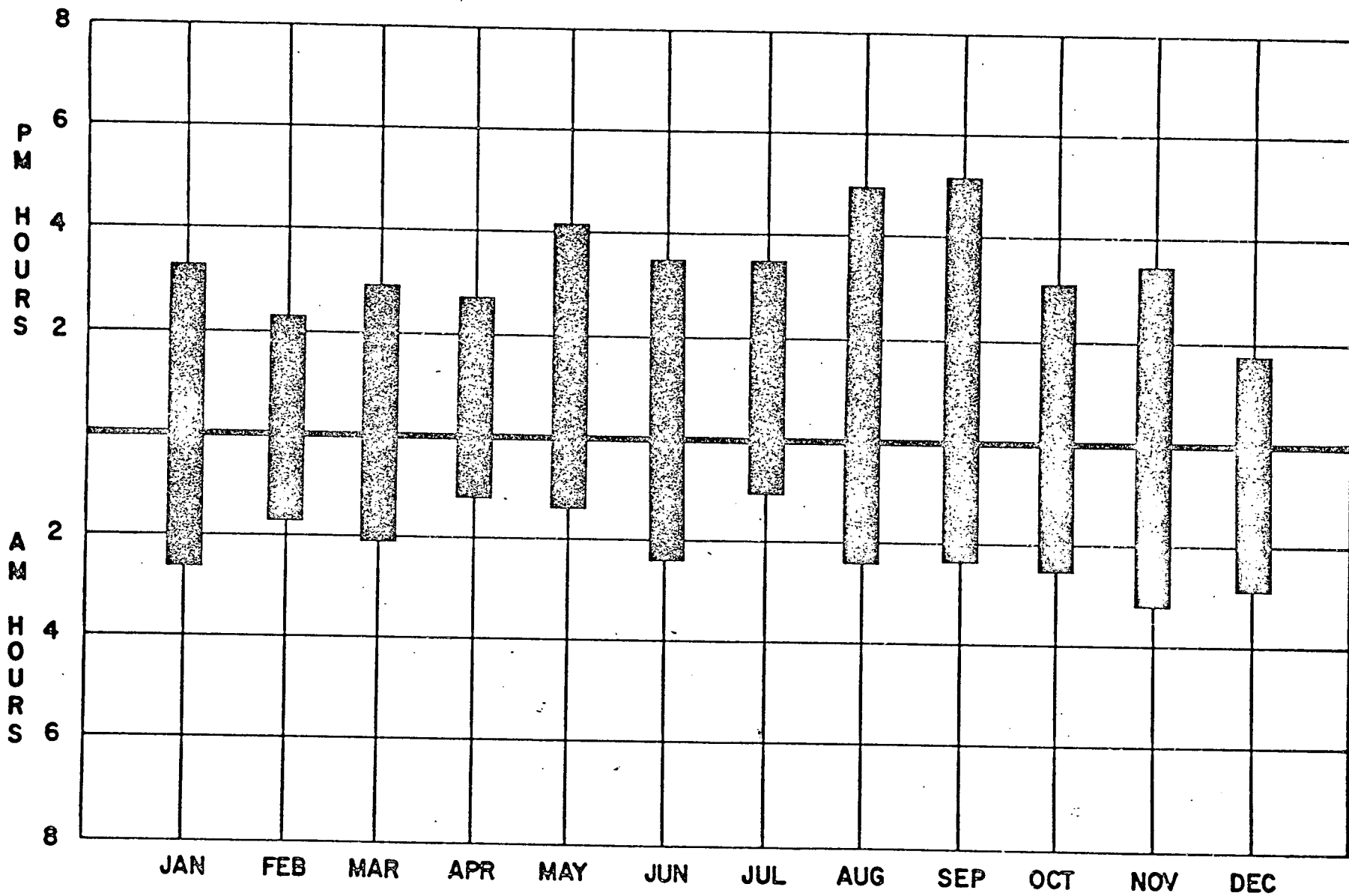
AM and PM Distribution of Average Potential Gradient Activity
Hours per Month, KSC Industrial Area 1965 through 1971

Table 3-5. Summary of Average Activity Days
per Month, CKAFS 1964-1971

Month	Potential Gradient Activity Days	Lightning Activity Days
Jan	6.5	0.8
Feb	8.1	3.3
Mar	6.0	1.1
Apr	3.7	0.4
May	7.0	5.5
Jun	12.1	8.0
Jul	15.6	12.9
Aug	13.4	8.9
Sep	11.1	5.4
Oct	11.1	3.6
Nov	8.4	1.3
Dec	2.4	0.9



Average of Potential Gradient Activity Days per Month,
CKAFS 1964 through 1971



AM and PM Distribution of Average Potential Gradient Activity
Hours per Month, CKAFS 1964 through 1971

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1. Alexander, W. H., "Distribution of Thuderstorms in the United States," Monthly Weather Review, volume 2, p 337, 1924.
2. Lightning Protection for Saturn Launch Complex 39, General Electric Company, NASw-410, September 10, 1963.
3. Analysis of Lightning Effects LC-34/37, p 2-3, General Electric Company, NASw-410, July 1, 1964.
4. Chalmers, J. A., Atmospheric Electricity, Pergamon Press, New York City, 1957.

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APPROVAL

KSC LIGHTNING SUMMARY REPORT
THROUGH 1971

APPROVED:

W. R. Timmons

W. R. Timmons, Chief
Test Analysis Section

R. B. Upson

R. B. Upson, Chief
Laboratory Branch

R. L. Wilkinson

R. L. Wilkinson, Chief
Measurement Systems Division

K. Sendler

K. Sendler, Director
Information Systems

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